PHILIPS 32PW9618

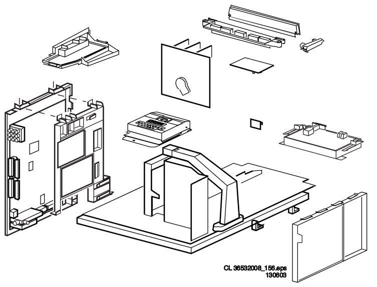
MODEL

SERVICE MANUAL

Colour Television **Chassis**

EM6E
AB

Service
Service
Service



For DVD module use Service Manual DVD SD5.31SL (3122 785 13710)

Service Manual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

1. Technical Specifications
2. Connections
3. Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	:	CRT, Real Flat WS
Screen size	:	28 inch (70 cm)
	:	32 inch (82 cm)
	:	36 inch (92 cm)
Tuning system	:	PLL
Colour systems	:	PAL: B/G, D/K, I
	:	SECAM: B/G, D/K, L/L'
	:	NTSC: playback only
Channel selections	:	100 presets
	:	UVSH
Aerial input	:	75 ohm, IEC-type

1.1.2 Sound

Sound systems	:	FM-mono, AM-mono
	:	FM-stereo: B/G, Czech
	:	NICAM: B/G, D/K, I, L
Maximum power	:	4 x 15 Wrms (int.)

1.1.3 Miscellaneous

Mains voltage	:	220 - 240 Vac
Mains frequency	:	50 / 60 Hz
Ambient temperature	:	+5 to +45 deg. C
Maximum humidity	:	90 % R.H.
Power consumption	:	
- Normal operation	:	≈ 130 W
- Standby	:	< 1 W

1.2 Connections

1.2.1 Front, top control and Side I/O Connections

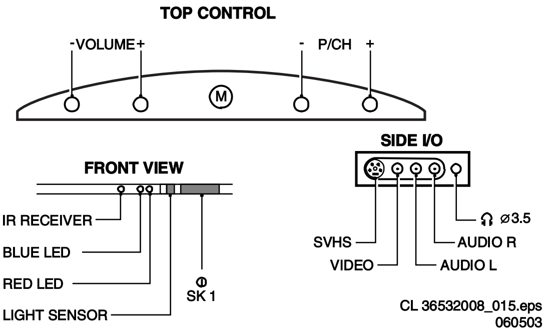
TOP CONTROL
-VOLUME+
- P/CH +
M
FRONT VIEW
IR RECEIVER
BLUE LED
RED LED
LIGHT SENSOR
SK 1
SIDE I/O
SVHS
VIDEO
AUDIO R
AUDIO L
ø3.5

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Figure 1-1 Front, top control and Side I/O

Hosiden: SVHS - In

1	- Y	Ground	⏚
2	- C	Ground	⏚
3	- Y	1 Vpp / 75 ohm	⊕
4	- C	0.3 Vpp / 75 ohm	⊕

Cinch: In

- CVBS	1 Vpp / 75 ohm	⊕◎
- Audio - L	0.5 Vrms / 10 kohm	⊕◎
- Audio - R	0.5 Vrms / 10 kohm	⊕◎

Mini Jack: Headphone - Out

- Headphone	32 - 600 ohm / 10 mW	🎧

1.2.2 Rear Connections

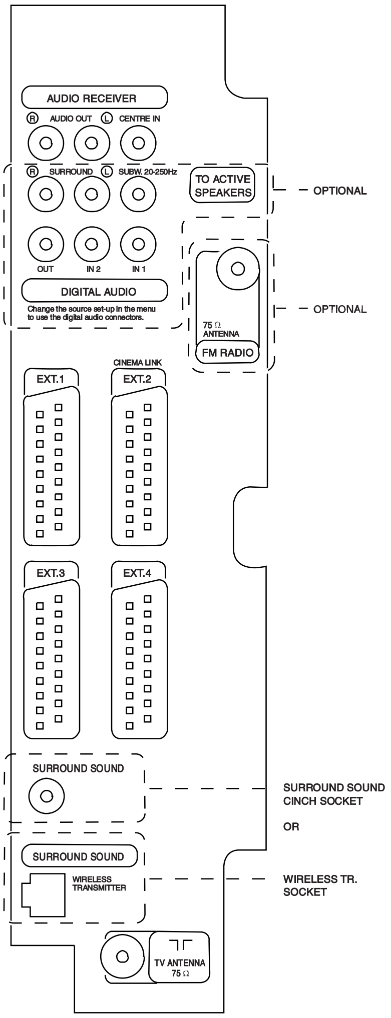
AUDIO RECEIVER
R AUDIO OUT L CENTRE IN
R SURROUND L SUBW. 20-250Hz
TO ACTIVE SPEAKERS
OPTIONAL
OUT IN 2 IN 1
DIGITAL AUDIO
Change the source set-up in the menu to use the digital audio connectors.
75 Ω ANTENNA
FM RADIO
OPTIONAL
CINEMA LINK
EXT.1
EXT.2
EXT.3
EXT.4
SURROUND SOUND
SURROUND SOUND CINCH SOCKET
OR
SURROUND SOUND
WIRELESS TRANSMITTER
WIRELESS TR. SOCKET
TV ANTENNA 75 Ω

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Figure 1-2 Rear View

Audio receiver

Audio - Out (Cinch)

R	- Audio - R	0.5 Vrms / 1 kohm	⊖➔◎
L	- Audio - L	0.5 Vrms / 1 kohm	⊖➔◎

Audio - In (Cinch)

C	- Audio - Centre		⊕◎

Sets equipped with Surround output for active speakers and Digital Audio:

R	- Surround - R	0.5 Vrms / 1 kohm	⊖➔◎
L	- Surround - L	0.5 Vrms / 1 kohm	⊖➔◎
	- Subwoofer	20 - 250 Hz	⊖➔◎

Digital Audio (if present)

- Dig. audio out		○→◎
- Dig. audio in 2		→○◎
- Dig. audio in 1		→○◎

Audio - Out (Cinch)

R	- Audio - R	0.5 Vrms / 1 kohm	○→◎
L	- Audio - L	0.5 Vrms / 1 kohm	○→◎

FM Radio (Optional)

- IEC-type	Coax, 75 ohm	⊤

External 1: RGB/YUV and CVBS - In/Out

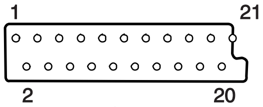

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Figure 1-3 SCART connector

1	- Audio - R	0.5 Vrms / 1 kohm	○→
2	- Audio - R	0.5 Vrms / 10 kohm	→○
3	- Audio - L	0.5 Vrms / 1 kohm	○→
4	- Audio	Ground	⏚
5	- Audio	Ground	⏚
6	- Audio - L	0.5 Vrms / 10 kohm	→○
7	- Blue / U	0.7 Vpp / 75 ohm	→○
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Video	Ground	⏚
10	- N.C.		
11	- Green / Y	0.7 Vpp / 75 ohm	→○
12	- N.C.		
13	- Video	Ground	⏚
14	- Video	Ground	⏚
15	- Red / V	0.7 Vpp / 75 ohm	→○
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	→○
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS	1 Vpp / 75 ohm	○→
20	- CVBS	1 Vpp / 75 ohm	→○
21	- Shielding	Ground	⏚

External 2: CVBS and SVHS - In/Out (for VCR)

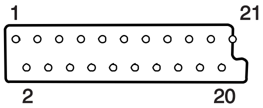

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Figure 1-4 SCART connector

1	- Audio - R	0.5 Vrms / 1 kohm	○→
2	- Audio - R	0.5 Vrms / 10 kohm	→○
3	- Audio - L	0.5 Vrms / 1 kohm	○→
4	- Audio	Ground	⏚
5	- Audio	Ground	⏚
6	- Audio - L	0.5 Vrms / 10 kohm	→○
7	- C	0.7 Vpp / 75 ohm	○→
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Video	Ground	⏚
10	- Easylink	(P50)	→○
11	- Green	0.7 Vpp / 75 ohm	→○
12	- N.C.		
13	- Video	Ground	⏚
14	- Video	Ground	⏚
15	- C	0.7 Vpp / 75 ohm	→○
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	→○
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS	1 Vpp / 75 ohm	○→
20	- CVBS	1 Vpp / 75 ohm	→○
21	- Shielding	Ground	⏚

External 3: CVBS - In

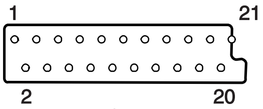

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Figure 1-5 SCART connector

1	-	Ground	○→
2	- Audio - R	0.5 Vrms / 10 kohm	→○
3	-	Ground	○→
4	- Audio	Ground	⏚
5	-	Ground	⏚
6	- Audio - L	0.5 Vrms / 10 kohm	→○
7	- N.C.		
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Video	Ground	⏚
10	- N.C.		
11	- N.C.		
12	- N.C.		
13	- Video	Ground	⏚
14	- Video	Ground	⏚
15	- N.C.		
16	- N.C.		
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- N.C.		
20	- CVBS	1 Vpp / 75 ohm	→○
21	- Shielding	Ground	⏚

External 4: CVBS - In

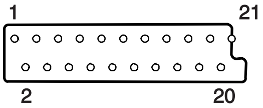

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Figure 1-6 SCART connector

1	-	Ground	○→
2	- Audio - R	0.5 Vrms / 10 kohm	→○
3	-	Ground	○→
4	- Audio	Ground	⏚
5	-	Ground	⏚
6	- Audio - L	0.5 Vrms / 10 kohm	→○
7	- N.C.		
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Video	Ground	⏚
10	- N.C.		
11	- N.C.		
12	- N.C.		
13	- Video	Ground	⏚
14	- Video	Ground	⏚
15	- N.C.		

16 - N.C.		
17 - Video	Ground	⏚
18 - Video	Ground	⏚
19 - N.C.		
20 - CVBS	1 Vpp / 75 ohm	→◯
21 - Shielding	Ground	⏚

Surround - Sound

Sets equipped with Surround-Out jack plug 3,5 mm

- Surround Audio	0.2 - 2 Vrms / 10 kohm	◯→

Sets equipped with Wireless Transmitter: RJ45

1 - SDA_TM	Signal	→◯ ◯→
2 - SCL_TM	Signal	◯→
3 - GND	Ground	⏚
4 - GND	Ground	⏚
5 - 11V_S	Supply	◯→
6 - AUDIO_SL	2.8 Vrms	◯→
7 - GND AUDIO	Ground	⏚
8 - AUDIO_SR	2.8 Vrms	◯→

Aerial - In

- IEC-type	Coax, 75 ohm	⊤

1.3 Chassis Overview

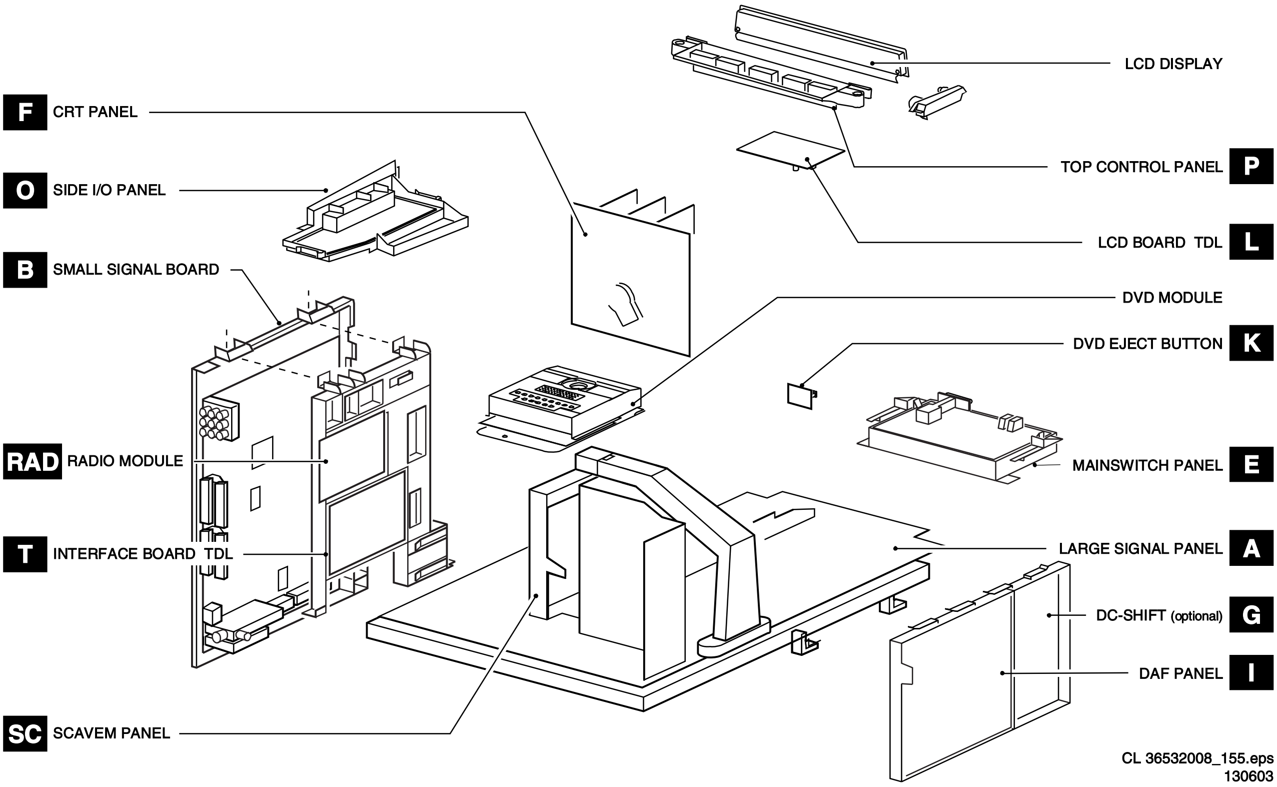
LCD DISPLAY
F CRT PANEL
TOP CONTROL PANEL P
O SIDE I/O PANEL
LCD BOARD TDL L
B SMALL SIGNAL BOARD
DVD MODULE
DVD EJECT BUTTON K
RAD RADIO MODULE
MAINSWITCH PANEL E
T INTERFACE BOARD TDL
LARGE SIGNAL PANEL A
DC-SHIFT (optional) G
DAF PANEL I
SC SCAVEM PANEL

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Figure 1-7 PWB location

2. Safety and Maintenance Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Due to the chassis concept, a very large part of the circuitry (incl. deflection) is 'hot'. Therefore, connect the set to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol h, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, you must return the set in its original condition. Pay, in particular, attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing. In particular this is valid for the:
  1. Pins of the line output transformer (LOT).
  2. Fly-back capacitor(s).
  3. S-correction capacitor(s).
  4. Line output transistor.
  5. Pins of the connector with wires to the deflection coil.
  6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the mains cord for external damage.
- Check the strain relief of the mains cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
  1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
  2. Turn on the main power switch (keep the mains cord unplugged!).
  3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch the TV 'off' and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
  1. Perform the 'general repair instruction' noted above.
  2. Clean the power supply and deflection circuitry on the chassis.
  3. Clean the picture tube panel and the neck of the picture tube.

  These values are indicated by means of the appropriate

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_{DC}). Discharge until the meter reading is 0 V (after approx. 30 s).

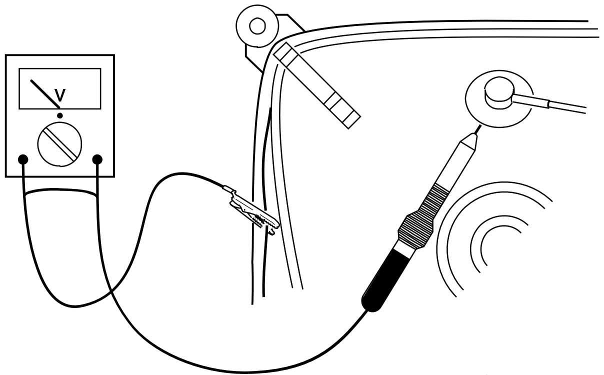


Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol w). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
  - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and ground cable) 4822 310 10671.
  - Wristband tester 4822 344 13999.
- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. We do not recommend adjusting this unit during repair.
- Be careful during measurements in the high voltage section and on the picture tube.
- Never replace modules or other components while the unit is 'on'.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (symbol ⏚), or hot ground (symbol ⇩), depending on the tested area of circuitry.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz (PAL) or 61.25 MHz (NTSC, channel 3).
- Where necessary, measure the waveforms and voltages with (symbol ┐┌) and without (symbol ⋊) aerial signal. Measure the voltages in the power supply section both in normal operation (symbol ⌽) and in standby (symbol ⏻). symbols.

- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. ‘Dolby’, ‘Pro Logic’ and the ‘double-D symbol’, are trademarks of Dolby Laboratories.

DOLBY SURROUND
PRO • LOGIC

Figure 2-2 Dolby PL Symbol

2.4.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kOhm).
- Resistor values with no multiplier may be indicated with either an 'E' or an 'R' (e.g. 220E or 220R indicates 220 Ohm).
- All Capacitor values are expressed in Micro-Farads (μ= $x10^{-6}$), Nano-Farads (n= $x10^{-9}$), or Pico-Farads (p= $x10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An 'asterisk' (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Rework on BGA ICs (Ball Grid Array)

General
Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device removal
As is the case with any component, it is essential when removing an (LF)BGA that the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB.
To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area preparation
When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.
Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.
After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.
Note: Do not apply solder paste, as this has shown to result in problems during re-soldering.

Device replacement
The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers.
To reflow the solder, apply a temperature profile according to the IC data sheet. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

Laser Safety

This unit employs a laser. Due to possible eye injury, only a qualified service person should remove the cover or attempt to service this device.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

LASER

Type	Semiconductor laser GaAlAs
Wave length	650 nm (DVD)
	790 nm (VCD/CD)
Output Power	7 mW (DVD)
	5 mW (VCD/CD)
Beam divergence	DVD: Parallel: 8 degree
	Perpendicular: 28 degree
	CD: Parallel: 11 degree
	Perpendicular: 35 degree

CLASS 1
LASER PRODUCT

CAUTION
VISIBLE AND INVISIBLE LASER RADIATION WHEN
OPEN AVOID EXPOSURE TO BEAM
ADVARSEL
SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING
UNDGÅ UDSÆTTELSE FOR STRÅLING
VARNING
SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR
DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VARO!
AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA
NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT
SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG
WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
ATTENTION
RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS
D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Help?

If this instruction manual does not give an answer or if 'Tips' do not solve your TV problem, you can call your Local Philips Customer or Service Centre. See the supplied World-wide guarantee booklet.
Please, have the Model and Product number which you can find at the back of your television set or on the packaging, ready, before calling the Philips helpline.

Model: 32PW9788
Product No: AG ....

End of life directives

Philips is paying a lot of attention to producing environmentally-friendly in green focal areas. Your new TV contains materials which can be recycled and reused. At the end of its life specialised companies can dismantle the discarded TV to concentrate the reusable materials and to minimise the amount of materials to be disposed of.
Please ensure you dispose of your old TV according to local regulations.

Contents

Installation

Preparation 2
Keys on top of the TV 2
Wireless surround speaker system 3
Your remote control 4-5
Contents of the LCD display 6
To use the menus 6
Select the menu language and country 7
Store TV channels 7
  Automatic installation 7
  Manual installation 8
  Give name 8
  Reshuffle the programme list 8
  Select favourite TV channels 8
Install TV setup 9
  Speakers 9
  General 10-11
  Source 11
  Decoder 11
Demo 12

Operation

TV menu
  Picture menu 12-13
  Sound menu 13-14
  Features menu 15
Dual screen / PIP / Multipip 16
NEXTVIEW/Teletext guide 17-18
Teletext 19-20
RDS Radio 21-22
DVD 23-26

Connect peripheral equipment

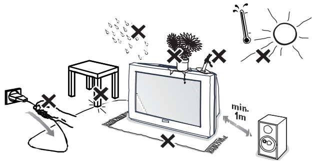
Connecting and selecting equipment 27-29
Audio and Video equipment keys 30

Tips 31-32

EasyLink features are based on the "one touch operation" approach. This means that a sequence of actions are executed at the same time in both the television and the video cassette recorder, provided both are fitted with the EasyLink function and connected with the eurocable supplied with your video recorder.

Preparation

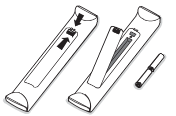
❶ Place the TV on a solid surface.
! 32PW9788: 60 kg !



For ventilation, leave at least 5 cm free all around the TV. Do not place the TV on a carpet. To prevent any unsafe situations, do not place any objects on top of the TV. Avoid heat, direct sunlight and exposure to rain or water. Keep mobile telephones at a safe distance to avoid disturbances in picutre and sound.

❷ Insert the aerial plug firmly into the aerial socket ┬ at the back of the TV. For best picture quality use the suppressor-aerial cable supplied.

❸ **Remote control**: Insert the 2 batteries supplied (Type R6-1,5V).



The batteries supplied do not contain the heavy metals mercury and cadmium. Please check on how to dispose of exhausted batteries according to local regulations.

❹ Insert the mains plug of the TV in the wall socket having a mains voltage of 220V-240V.

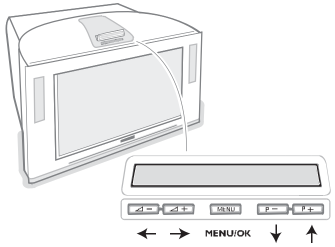
❺ **Switch the TV on** : Press the power switch ⏻ on the front of your TV.
A blue indicator on the front of the TV lights up, the screen comes on and the LCD display smoothly and automatically pops up. If the indicator is red, press the **-P+** keys on the remote control.

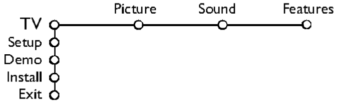
❻ **LCD display**: When popped up, the LCD display will show the mode the TV is in (**TV**, **DVD** or **Radio**) together with information about the selected mode.
When the TV is switched off to standby the display will go down again. When the TV is switched off with the power switch the display will remain in the position it was. If needed, you can manually push the display down.

Note:
- to switch off the automatic display movement, see Setup, General menu, Auto LCD movement, p. 10.
- you can change the position of the display, up or down, with the LCD key on the remote control. See use of the remote control, p. 4.

More details about the content of the display, see p. 6.

Keys on top of the TV





Should your remote be lost or broken you can still change some of the basic settings with the keys on top of your TV.

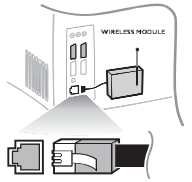
Press:
• the ⊿ - or + key to adjust the volume;
• the **-P+** keys to select the TV channels or sources.

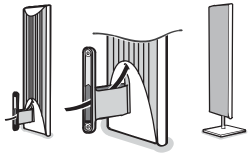
The **MENU** key can be used to summon the main menu without the remote control.

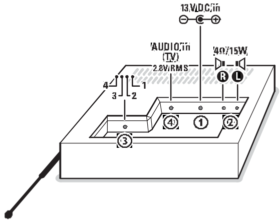
Use:
• the ⊿ - and + keys and the **P-** and **P+** keys to select menu items in the directions as shown;
• the **MENU** key to confirm your selection.

Note:
*When activated via the **MENU** key on top of the TV, only **Exit** lets you dismiss the menu.*
*Navigate to **Exit** and press the **MENU** key.*

Wireless Surround speaker system







Wireless transmitter module

- Switch the TV off with the power switch.
- Attach the wireless module to the back of the TV as shown.
- Connect the attached cable to the wireless module connector.
- Switch the TV on.

Surround loudspeakers

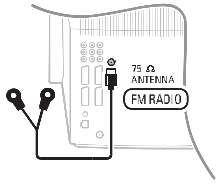
- There are two NXT SurfaceSound® * surround loudspeakers which have to be connected to the wireless receiver box ② **R** and **L**.
  If one of the connection cables is too short the 4 m extension cable supplied can be used. Table stands as well as wall supports are supplied.
- The Surround sound loudspeakers can be located behind or to either side of the listener. The front of the loudspeakers do not have to face the listener. The distance between the TV and the surround speakers should not exceed 15 m.

Wireless receiver box

Connect the **13V DC** adaptor supplied to the **13V DC IN** ① input at the bottom of the receiver box. Connect the adaptor to the mains.
The slide channel switch ③ has been set default to channel 1 in the factory.
The indicator on the receiver box shows that the speakers are in standby. During sound transmission the indicator turns to green. 10-15 min. after the sound transmission of the TV has stopped, the indicator turns back to red to indicate the low power standby.

The system has already been configured in the factory to work properly. In rare circumstances, interference from external RF (wireless) equipments such as RF headphones, mobile phones or remote controls for lights, may occur. Then it may be necessary to shift to another wireless channel. **Important**: Always be sure that the Wireless receiver box and the Wireless Surround settings (see p. 9) are switched to the same transmitting channel.

In rare cases, when no RF surround sound is possible, or when there is too much interference, use the wired back up solution. See Wired rear loudspeakers, p. 28.



FM Wire Antenna connection

Connect the supplied FM wire antenna to the **FM RADIO ANTENNA 75** Ω connector at the back of the TV. Adjust the position of the FM antenna for the best reception.

*Note: for better FM stereo reception, connect an outdoor FM antenna or cable antenna to the **FM RADIO ANTENNA 75** Ω connector using a 75 Ω coaxial wire.*

* ® NXT® is a trademark of New Transducers Limited

Use of the remote control RC 4361

*Note: For most keys pressing a key once will activate the function. Pressing a second time will de-activate it. When a key enables multiple options, a small list will be shown. Press repeatedly to select the next item in the list. The list will be removed automatically after 4 seconds or press **OK** to remove immediately.*

VCR DVD SAT AMP CD
Audio- and Video equipment keys (p. 30)

Select peripherals
(p. 29)

● ◀◀ ■ ▶ ▶▶
Audio- and Video equipment keys (p. 30)
RDS radio function, see p. 21
DVD see p. 23

Cinema Go
See separate Cinema Link booklet supplied.

● Instant record
See Record with your recorder with EasyLink, p. 30

NEXTVIEW on/off p. 17
Press the 1|2 key to show NEXTVIEW/Teletext Guide on the right half of the screen.

▶|◀ Freeze/Replay/Photo finish
To freeze the picture.
See also p. 10.

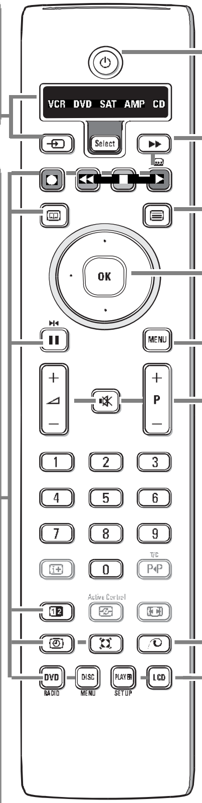
❚❚ DVD mode function p. 23

Time display
The time is displayed on the screen.

Surround mode
Press this key repeatedly to select another available surround mode.

DVD/RADIO
TV, DVD, Radio mode selection

DISC/MENU
To select DVD menu, see p. 23.



Standby
Press to switch the TV on or off. When switched off, a red indicator on the TV lights up.

Teletext on/off p. 19
RDS radio function, see p. 21.
Press the 1|2 key to show teletext on the right half of the screen.

OK Press this key
- to activate your choice, when in the menus.
- to display the programme list.

MENU Main menu on/off p. 6
RDS radio function, see p. 21.

◿ To adjust the volume.

Interrupt the sound or restore it.

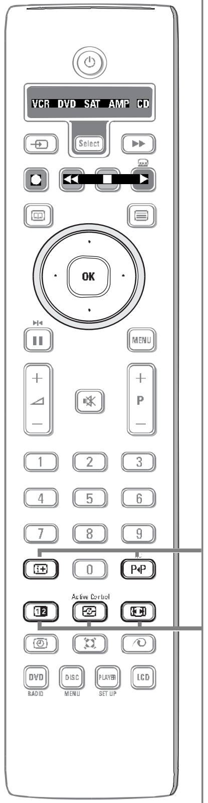
P Programme selection
To browse through the TV channels and sources stored in the favourite list.
RDS radio function, see p. 21

0/9 Digit keys
To select a TV channel.
For a two digit programme number, enter the second digit before the dash disappears. To switch immediately to a selected one digit TV channel, keep the digit key pressed a bit longer.

Pixel Plus demo on/off
In the right part Pixel Plus and Digital Natural Motion are switched on.

PLAYER/SETUP
To select DVD player Setup menu, p. 23.

LCD LCD tilt up/down



On Screen information
Press to display information about the selected TV channel and programme.
RDS radio function, see p. 21

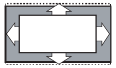
Menu/Remote control info
When a menu is on screen, press i+ to display info on the selected menu item. For information on the remote control functions, while the menu info is displayed, press any key on the remote control.
The normal function of the key is not executed.

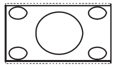
P‹P Smart surf / nexTView themes
With this key you can easily switch between 2 up to 9 different TV channels or sources or quickly select TV programmes if NEXTVIEW with defined themes is broadcast. See General, Smart surf, p. 10.
Press the **OK** key or wait for the time out to dismiss the Smart surf display.

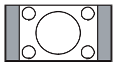
Dual screen / PIP / Multipip see p. 10 and p. 16.

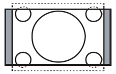
Active control see p. 13

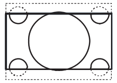
Picture format
Press this key repeatedly or press the cursor up/down to select another picture format: Auto format, Super zoom, 4:3, Movie Expand 14:9, Movie Expand 16:9, Subtitle zoom or Wide screen.

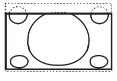

Auto format

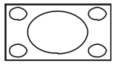

Super zoom


4:3


Movie Expand 14:9


Movie Expand 16:9


Subtitle zoom


Wide screen

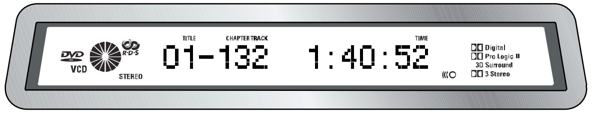
Auto format makes the picture fill the screen as much as possible.
In case of subtitles in the bottom black bar, Auto format makes the subtitles visible. If subtitles are only partly visible, press cursor up.
In case of a broadcaster logo in the corner of the top black bar, the logo disappears from the screen.

Super zoom removes the black bars on the sides of 4:3 programs with minimal distortion.

When in Movie Expand 14:9, 16:9, Super zoom or Subtitle zoom picture format, you can make subtitles visible with the cursor up/down.

P‹P RDS Radio function, see p. 21
DVD mode function, see p. 23

Contents of the LCD display


DVD
VCD
R·D·S
STEREO
TITLE
CHAPTER TRACK
01-132
TIME
1:40:52
((O
Digital
Pro Logic II
3D Surround
3 Stereo

((o starts blinking when the TV is receiving a command from the remote control.
Dependent on the selected mode, the following information may be displayed:

In TV mode:

- channel number or name or the selected external
- a volume bar
- feed back messages
- the surround signal the TV is processing

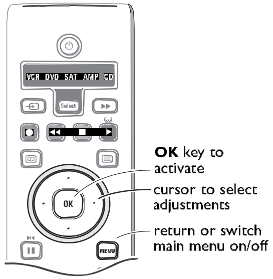
In DVD mode:

- the type of disc that is in the slot (DVD, VCD, CD...)
- the track, title, chapter and time indication
- the surround signal the TV is processing

In Radio mode:

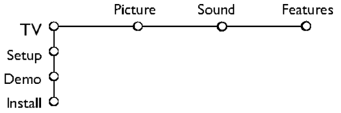
- the name of the selected station, the type of programme, the frequency
- a volume bar
- the RDS icon when playing a radio station with RDS signal
- the sound signal (stereo)
- the surround signal the TV is processing

To use the menus


VCR DVD SAT AMP CD
Select
OK
MENU
OK key to activate
cursor to select adjustments
return or switch main menu on/off

Press the [i+] key to get information about the selected menu item.

❶ Press the **MENU** key on the remote control to summon the main menu. At any moment you can exit the menu by pressing the **MENU** key again.
Note: If you have connected equipment with Cinema Link, more menu items are present.


Picture
Sound
Features
TV
Setup
Demo
Install

❷ Use the cursor in the up/down direction to select the **TV**, **Setup, Demo** or **Install** menu.
Use the cursor left/right to select **Picture, Sound** or **Features.**
Note: Sometimes not all the menu items are visible on the screen (indicated by a cluster of blue balls). Use the cursor down or right to reveal all items.

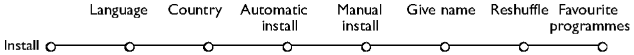
❸ Use the cursor in the left/right direction to select the menu item.

❹ Use the cursor up/down again to select the control you want to select or to adjust.

Note: Items temporary not available or not relevant are displayed in a light grey colour and cannot be selected.

Installation

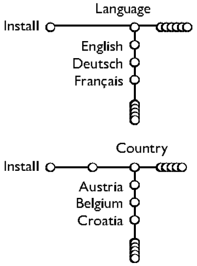
The installation menu contains the following items:


Language
Country
Automatic install
Manual install
Give name
Reshuffle
Favourite programmes
Install

EasyLink

If your video recorder has an EasyLink function, during installation, the language, country and available channels are automatically transmitted to the video recorder.

Select the menu language and country

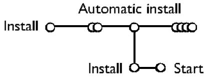

Language
Install
English
Deutsch
Français
Country
Install
Austria
Belgium
Croatia

❶ Press the **MENU** key on the remote control.
❷ Use the cursor down to select **Install.**
❸ Use the cursor right to select **Language.**
Follow the instructions on screen.
❹ Use the cursor up/down to select your preferred language and press the **OK** key to confirm your selection.
❺ Use the cursor right to select **Country.**
❻ Select the country where you are now located and press the **OK** key.
Select **Other** when none of the countries applies.
❼ Proceed with the Install menu.

Store TV channels

After language and country are set correctly, you can now search for and store the TV channels in two different ways: using Automatic Installation or Manual Installation (tuning-in channel by channel).
Select your choice with the cursor right.

Automatic installation

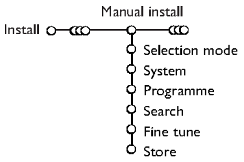

Automatic install
Install
Install
Start

❶ Select **Automatic install** in the Install menu.
Note: All channels must be unlocked in order to autoprogram. If requested, enter your code to unlock all channels. (See TV, Features menu, Childlock, p. 15.)
❷ Press the cursor down.
The autoprogramming option label **Start** appears.
❸ Press the cursor right.
❹ The message **Searching** appears and the progress of autoprogramming is displayed.

If a cable system or a TV channel which broadcasts ACI (Automatic Channel Installation) is detected, a programme list appears. Without ACI broadcast, the channels are numbered according your language and country selection. You can use Reshuffle to renumber them. See p. 8.

*It is possible that the cable company or the TV channel displays a broadcast selection menu. Layout and items are defined by the cable company or the TV channel. Make your choice with the cursor and press the **OK** key.*

Manual installation



Searching for and storing TV channels is done channel by channel. You must go through every step of the Manual Installation menu.

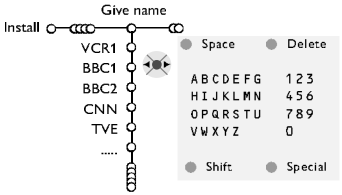
❶ Select **Manual install** in the Install menu.

❷ Press the cursor down.
Follow the instructions on screen.

Note: Search or direct selection of a TV channel.
If you know the frequency, the C- or S-channel number, enter the 3 or 2 digits of the frequency or the channel number directly with the digit keys 0 to 9 (e.g. 048). Press the cursor down to proceed.

Repeat to search for another TV channel.

Give name



It is possible to change the name stored in the memory or to assign a name to a TV channel for which a name has not yet been entered. A name with up to 5 letters or numbers can be given to the programme numbers 0 to 99.

❶ Select **Give Name** in the Install menu and press the cursor down.

❷ Select the programme number.
Note: keep the cursor up/down pressed to scroll through the programme list quickly.

❸ Press the cursor right.
A keyboard appears on the screen.
Press the cursor right to enter the keyboard.
Press the cursor up/down, left/right to select the first character and press **OK**. Repeat for every character you want to enter.
Select **Space** to enter a space; **Delete** to erase the highlighted character in the name entered; **Shift** to display upper- or lowercase characters on the keyboard; **Special** to display special characters on the keyboard. Press **OK** to confirm.

❹ Press the cursor left repeatedly when you have finished the name giving.

❺ Select another programme number and repeat steps ❸ to ❹.

Reshuffle the programme list

You can change the order of the stored TV channels.

❶ Select **Reshuffle** in the Installation menu.

❷ Follow the instructions on screen.

Select Favourite TV channels

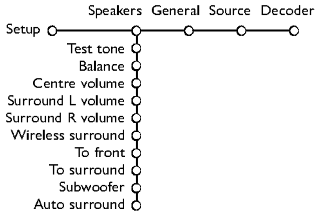
❶ Select **Favourite programmes** in the Install menu.

❷ Select your programme number with the cursor up/down.

❸ Select **Yes** or **No** with the cursor right.

❹ Repeat ❷ and ❸ for every TV channel or external you want to make a favourite or a non-favourite TV channel or external.

TV Setup



The Setup menu contains items that control the settings of the TV's functions, features, services and peripherals you may have connected.

The **Speakers** menu reflects the speaker-related controls.
The **General** menu allows you to change settings that will typically be accessed only occasionally.
The **Source** menu allows you to select a source.
The **Decoder** menu allows you to define one or more programme numbers as decoder programme numbers.

Speakers

Your TV is equipped with integrated front left, right and centre loudspeakers, capable of reproducing Stereo and Dolby 3 stereo modes.
For Hall, full Dolby Pro Logic II and Dolby Digital surround sound you should use the two amplified rear surround speakers.

Depending on the output and Surround mode (see Main menu, TV, Sound, Surround mode, p. 13) selected, some menu items may be greyed out and are not selectable.

Test tone controls

The menu item **Test tone** enables you to balance the volume levels of the speakers.

❶ Select **Test tone** and press the cursor right.

❷ Once turned on, the Test Tone will circulate through the left, centre, right speakers and both rear surround speakers (if present).

❸ Press the cursor up/down to select the desired speaker for individual volume level adjustment.

❹ Press the cursor left/right to adjust the volume level.

Wireless Surround

The system has already been configured in the factory to work properly.
In rare circumstances, interference from external RF (wireless) equipment such as RF headphones, mobile phones or remote controls for lights, may occur.
Then it may be necessary to shift to another wireless channel.
Use the cursor left/right, up/down to select another channel.

Important: Always be sure that the wireless receiver box and the Wireless Surround setting are switched to the same transmitting channel. Otherwise no sound or only a distorted sound will be heard on the surround speakers.

To avoid interfered picture the wireless transmitter might be automatically switched off.

In rare cases, when no RF surround sound is possible or when there is too much interference, use the wired back up solution with a 3.5 mm stereo jack. In this case select **Off** in the Wireless surround menu item. See Connect Peripheral equipment, Wired rear loudspeakers, p. 28.

To front / To surround

Select **To front** or **To surround** and then select the distance between the TV or the rear surround speakers and the place you sit to watch TV.

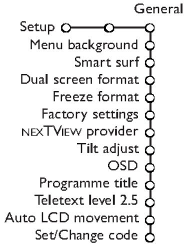
Subwoofer

Select if you want to use the internal subwoofer or if you installed an external one. See Connect Peripheral Equipment, Connect extra subwoofer, p. 28.

Auto Surround

Sometimes the broadcaster transmits special signals for Surround Sound encoded programmes.
The TV automatically switches to the best surround sound mode when **Auto Surround** is switched **On**. However it is possible to overwrite this setting.

General



This menu allows you to change various settings that are presumably adjusted less frequently than most other settings.

Press the i+ key on the remote control to get information about the selected menu item.

Smart surf

❶ Select **Smart surf**.

❷ With the cursor left/right, select
- **2 programmes** if you want the P◂P key to toggle between the current and the previously selected channel,
- **9 programmes** if you want the P◂P key to summon a list of up to 9 channels which can be selected,
- **Themes** if you want the P◂P key to quickly select TV programmes if NEXTVIEW with defined themes is broadcast.

To add/remove a channel or source:

Tune to the channel or source you wish to add or remove. Press the P◂P key and press the cursor right to add or remove.

Note: If there are already 9 channels/sources in the list, the one at the bottom of the list will be removed.

Freeze format

Freeze format allows you to select among three options: **Freeze, Replay** or **Photo** finish, to be activated when you press the ▸I◂ key on the remote control. See p. 4.

Note: Continuing to hold the ▸I◂ key down will also cycle the TV through the various formats. Changing the format this way does not store the selected format.

Factory settings

This resets the picture and sound settings to their predefined factory values, but maintains the channel installation settings.

Dual screen format

This menu allows you to select the preferred format which can then be displayed toggling the 12 key on and off.
For Dual screen/PIP/ Multipip and restrictions when in DVD mode, see p. 16.

❶ Select **Dual screen format** with the cursor down.

❷ Press the cursor right.

❸ Select **Dual screen, PIP, PIP 3** or **PIP 12** with the cursor down.
When Dual screen mode is activated with the remote control 12 key, and when
- **Dual screen** is selected, the TV splits the screen into two equally sized screens.
- **PIP** is selected, the TV shows a full screen of video with a pip window of video on top if it;
- **PIP3** or **PIP12** is selected, the TV will display the main screen together with 3 or 12 pip screens.

NEXTVIEW provider

Select a TV broadcaster that provides NEXTVIEW data. How to make use of NEXTVIEW, see p. 17.

OSD (On Screen Display)

See Use of the remote control, p. 5, i+ On screen information.

❶ Select **OSD**.

❷ Select **Normal** to activate the continuous display of the programme number. Also TV channel and programme information are extended. **Minimum** will display reduced channel information.

Note: When subtitles is switched on, see Features, p.15, continuous display of the programme number is not possible.

Teletext level 2.5

Some broadcasters offer the opportunity to see more colours, other background colours and nicer pictures in the teletext pages.

❶ Select **Teletext level 2.5**.

❷ Press the cursor right to select **Teletext level 2.5 On** to take advantage of this feature.

❸ Press the cursor right again to select **Teletext level 2.5 Off** if you like the more neutral teletext layout.
The selection made is valid for all channels which broadcast teletext level 2.5.

Note: It may take a few seconds before teletext broadcast switches over to Teletext level 2.5.

Set/Change code

The Child lock feature (see TV, Features, p. 15) allows you to lock channels to prevent others from watching certain programmes. To watch locked channels, a 4-digit code must be entered. The Set/Change code menu item allows you to create or change a Personal Identification Number (PIN).

❶ Select **Set/Change code**.

❷ If no code exists yet, the menu item is set to Set code. If a code has previously been entered, the menu item is set to **Change code**. Follow the instructions on screen.

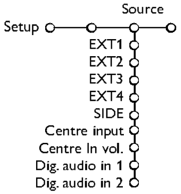
Important: You have forgotten your code !

❶ Select **Change code** in the General menu and press **OK**.

❷ Press the cursor right and enter the overriding code 8-8-8-8.

❸ Press the cursor again and enter a new personal 4-digit code. The previous code is erased and the new code is stored.

Source



This menu allows you to indicate the peripheral you connected to one of the external inputs.

❶ Press the cursor right to enter the list of types of peripherals attached to the selected input.

❷ Select the peripheral device with the cursor up/down.
Once you have selected the source type, e.g. DVD, this source will automatically be selected when your remote control is in DVD mode, see p. 4, and when you press the ⊕ key on the remote control.

Centre input - Centre in volume

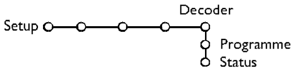
When you have connected a surround receiver to the TV, the loudspeakers of the TV can act as centre speaker, making a separate centre speaker unnecessary.
Select **Centre input On** or **Cinema Link**.
Select **On** in case you have connected an external audio receiver without Cinema Link.
Select **Cinema Link** in case you have connected a Cinema Link surround receiver.
When having selected **On** you can adjust the **Centre in volume** with the cursor left/right to correct volume level differences of the external audio receiver and speakers.

Digital audio in 1 or 2

❶ Select **Dig audio in 1** or **2**.

❷ Select one of the corresponding connections in the list when you connected your digital device together with the additional audio cable you connected to one of the digital audio in sockets of your TV. See Connect Peripheral equipment, Digital equipment, p. 27.

Decoder



If a decoder or a descrambler is connected, see p. 27, you can define one or more programme numbers as decoder programme numbers.

❶ Select **Decoder** with the cursor right.

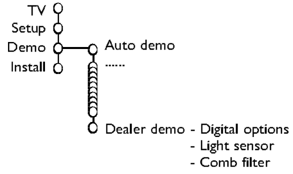
❷ Select **Programme**.

❸ Select the programme number under which you have stored the programme coming from your decoder.

❹ Select **Status**.
- Select the input used to connect your decoder: **None, EXT1** or **EXT2**.
- Select **None** if you do not want the selected programme number being activated as a decoder programme number.

Note: Select ***EXT2*** *when the decoder is connected to your EasyLink video recorder.*

Demo



The Demo menu allows to demonstrate the TV features separately or in a continuous loop.

If **Auto demo** has been selected the demo will automatically present the features sequentially in a loop. Press one of the cursor keys to stop the Auto demo.
If one of the features has been selected, this particular feature demo will run only once, and the Demo menu will reappear.

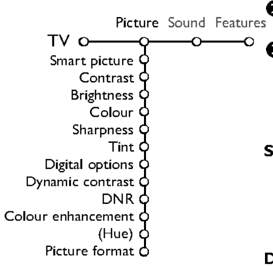
Note: The Dealer demo is not part of the automatic sequence and can only be activated separately.

TV menu

Press the **MENU** key on the remote control to summon the main menu.

Press the ⓘ+ key on the remote control to get information about the selected menu item.

Picture menu



❶ Press the cursor right to select **Picture.**

❷ Select the menu items in the Picture menu with the cursor up/down.

❸ Adjust the settings with the cursor left/right or enter the list of submenu items with the cursor right. Select a submenu item with the cursor up/down.
Note: To remove the menu background before adjusting the picture settings, see Select TV setup, General, p. 10.

Smart picture

Select **Smart picture** to display a list of predefined picture settings, each corresponding with specific factory settings.
Personal refers to the personal preference settings of picture in the picture menu.

Digital options

Pixel Plus is the most ideal setting, doubles the horizontal resolution and increases the number of lines with 33%. You may consider to select Movie Plus in case a halo effect should disturb you. Dependent on your own preference, select Double lines, or 100 Hz Digital Scan.

Note: When 60 Hz NTSC material is used, the options are changed to Pixel Plus, Movie Plus or Progressive, progressive scan without motion compensation.

Active Control

The TV continuously measures and corrects all incoming signals in order to provide the best picture possible.

❶ Press the ⟲ key on the remote control.

❷ The Active Control menu appears.

❸ Press the cursor up/down to select the Active Control values **Off, Minimum, Medium** (recommended) or **Maximum.**
The picture settings are being optimised continuously and automatically which is displayed by bars. The menu items can not be selected.

❹ Press the cursor right to select **Smart Picture.**

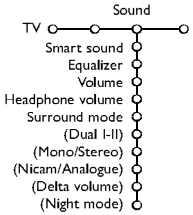
❺ Press the cursor up/down to select one of the predefined picture settings.

❻ Press the cursor right to select **Active Display.**

❼ Press the cursor up/down to select **Bars**, one of the Dual screen demos or **Off.**
When you select Dynamic contrast, Pixel Plus, Digital Noise Reduction or Digital Natural Motion, the TV screen is divided into two parts: in the left part the selected picture quality setting is switched off; in the right part it is switched on.

❽ Press the ⟲ key again to switch off the Active Control menu.

Sound menu



❶ Press the cursor right to select **Sound.**

❷ Select the menu items in the Sound menu with the cursor up/down and adjust the settings with the cursor left/right. Remember, control settings are at normal mid-range levels when the bar scale is centred.

Smart sound

Select **Smart sound** to display a list of predefined sound settings, each corresponding with specific factory settings of treble and bass.
Personal refers to the personal preference settings of sound in the sound menu.

Notes:
- *Some menu items are only available in case of a Cinema Link configuration and when the Cinema Link is activated. Others are steered by the audio receiver instead of by the TV. See the separate Cinema Link booklet supplied.*
- *Dual I-II is only available with dual sound transmission.*
- *Mono/Stereo is only selectable in case of analogue stereo transmission.*
- *Nicam/Analogue is only selectable in case of Nicam transmission.*

Surround Modes

Dependent on your personal preference and the sound signal broadcasted, select one of the Surround modes.

Stereo

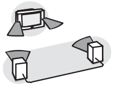
This mode reproduces only the left and right front sound signals.

Dolby 3 Stereo

(optimal with Dolby Surround broadcasting)

The Dolby Pro Logic* sounds are distributed over the front left, the front right and the centre TV loudspeakers.

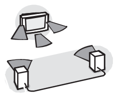
Hall



The sound signal is distributed over the rear loudspeakers which creates a hall effect from the rear.
The centre loudspeaker does not reproduce any signal.

Dolby Pro Logic II

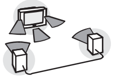
(optimal with Dolby Surround broadcasting)



All front and rear loudspeakers reproduce the Dolby Surround Pro Logic II sounds.
This sound is always present in the movie or programme marked with DD Dolby Surround.

Note:
- *Normal stereo broadcast is not always encoded to produce a rear surround sound effect.*
- *In case of a Cinema Link receiver configuration connected, only the surround modes of the external receiver can be selected.*

Dolby Digital



When you have connected a DVD player or a Laser Disc player (see Connect Peripheral equipment, Digital equipment, p. 27), you can enjoy Multi Channel Surround Sound in your home when playing discs recorded in Dolby Digital.
In addition to the centre, the left and right internal speakers, the left and right rear surround loudspeakers reproduce the Dolby Digital Surround sounds.

Dolby Digital sound reception info via the [i+] key

Press the [i+] key.
When Dolby Digital sound is reproduced, the sound info on screen displays the number of loudspeaker signals which are transmitted.
This is indicated by 2 numbers: the first one indicates the number of front loudspeaker signals, the second one the number of rear loudspeaker signals.
E.g. 'Dolby Digital 3/2' means that 3 front signals are transmitted: left, right and centre, and 2 rear signals: left and right surround.
'Dolby Digital 1/0' means that a mono signal is transmitted.
'Dolby Digital 2/0' means that the transmission contains a stereo signal which can be Dolby Surround encoded. In this case the surround mode will display Dolby Pro Logic II.

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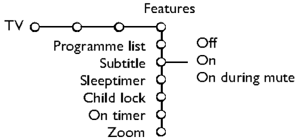
* Dolby' 'Pro Logic' and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation. Manufactured under license from Dolby Laboratories Licensing Corporation.

Features menu



Programme list

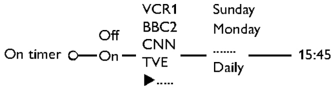
Press the **OK** key to switch over to the selected TV channel or external.

Select subtitles

The subtitle page must be stored for each TV channel:
Switch on teletext and select the proper subtitle page from the index. Switch off teletext.
Subtitle On will automatically display them on the selected TV channels if subtitles are in the transmission. A symbol will indicate that the mode is on.
Select **On during mute** when you want to have the subtitles automatically displayed only when the sound has been muted with the 🔇 key on the remote control.

On timer

❶ Select **On timer** with the cursor down.



❷ Select **On** with the cursor right.

❸ Press the cursor right again to enter the programme list.

❹ Select the TV channel or external you want your TV to switch to on a selected time and day.

❺ Press the cursor right again to select a day of the week or to select **Daily**.

❻ Press the cursor right once again to enter the time with the digit keys or with the cursor up/down and press the **OK** key to activate.

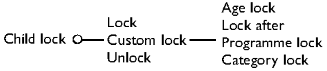
❼ Press the **MENU** key to turn off the menu.
Note: To check your timer settings, press the [i+] key.

Press the cursor right to select **Features**.
Select the menu items with the cursor up/down and adjust the settings with the cursor left/right.

Press the [i+] key on the remote control to get information about the selected menu item.

Child lock

❶ Select **Child lock.**



❷ Press the cursor right to enter the Child lock menu. You're summoned to enter your code.
Note: You have to re-enter your code each time you enter the child lock menu.

Important: You have forgotten your code! See p. 11.

❸ Select one of the menu items of the child lock menu:
- **Lock** if you want to lock all channels and externals.
- **Custom lock** and press the cursor right.
  The items Age lock and Category lock are only available when NEXTVIEW broadcast is available.
  Select:
  - **Age lock** if you want to lock programmes related to a certain age: off, 2, 4 ... 18;
  - **Lock after** if you want to lock all programmes from a certain time onwards. Press the cursor right and enter the time with the cursor up/down and right. Press the **OK** key to validate.
  - **Programme lock** if you want to lock a certain TV channel or external;
  - **Category lock** if you want to lock programmes related to a certain theme: Movies, Sports, Shows.... See NEXTVIEW, p. 17.
- Select **Unlock** to disable all locks you have set.

Note:
- The Radio mode can not be locked separately.
- DVD mode - Disc Lock, see p. 26.

Zoom

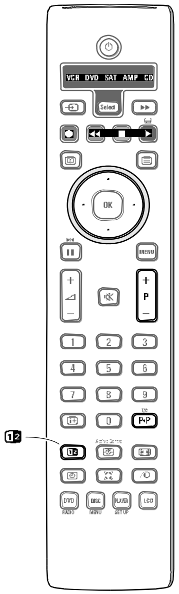
❶ Select **Zoom** with the cursor down and press the **OK** key.

❷ Press the **OK** key to select one of the zoom magnifications (x1, x4, x9, x16).

❸ Additionally you can shift the selected zoom window over the screen with the cursor keys up/down, left/right.

❹ Press the **MENU** key to switch off the zoom function.

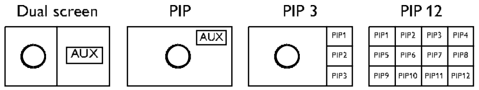
Dual screen / PIP / Multipip



Press the 12 key to switch on **Dual screen, PIP** or one of the PIP modes.
Press the 12 key again. The screen that has a yellow border will become the full main screen picture.

Notes:
- *Continuing to hold the 12 key down will cycle the TV through the various formats launching a new format after each second the key is held down. After standby of the TV, the preference as set in the Setup, General menu is used.*
- *When Dual screen mode is selected, two picture formats are supported: Full screen or 4:3 letterbox picture format (vertical squeeze).*
- *Audio from the right screen or the PIP plays to the headphones.*
- *Dual screen/PIP/Multipip is not possible in Radio and DVD mode.*

Display options



- Press the cursor right to highlight the right screen.
- Press the cursor down to highlight the single PIP screen.
- Press the cursor right to enter the Multipip screen and then use the cursor keys to navigate through the PIP screens and to hightlight a PIP screen.

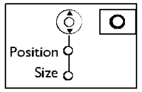
Changing TV channels or external sources in left, right, PIP or Multipip screen

- Press the **-P+** keys or the P◂P key or the digit keys in order to change the TV channels or external sources in the highlighted screen.

Scan PIP3 or PIP 12

Navigate to the lowest PIP and press the cursor down to display a following series of PIP screens.

Define the position and the size of the single PIP screen



❶ Select a Dual screen mode with a single PIP screen.
❷ Press the cursor down to highlight the PIP screen. A PIP menu appears with which you can define the position and the size of the PIP screen.
Note: When the PIP menu times out, press the OK key to make it reappear.
❸ Press the cursor down again to select **Position** or **Size.**
❹ Press the **OK** key or the cursor right to activate.
❺ Use the cursor keys to define the position of the PIP screen.
Use the cursor left/right to define the size of the PIP screen.
❻ Press the **OK** key. The PIP menu reappears.
❼ Press the cursor up to the top of the menu to highlight the main screen again.
❽ Press the **OK** key to switch off the menu or wait until it is timed out.

On-Screen information

The highlighted On-Screen information, which appears when changing channels, always refers to the active screen.

NEXTVIEW / Teletext guide

NEXTVIEW is an electronic guide that allows you to look up programmes as you would in a newspaper or a TV magazine. You can sort the programmes by subject (films, sport...), obtain detailed information and programme your video recorder if it comes with the NEXTVIEWLink function.

Important note: ***The NEXTVIEW service is only available on certain programmes and in certain countries****. When no NEXTVIEW information is broadcast, the teletext programme guide appears in its place. This is based on teletext programme information (if available) and offers most functions of NEXTVIEW.*
Note: The broadcaster is responsible for the content of the information.

Call NEXTVIEW / Teletext guide

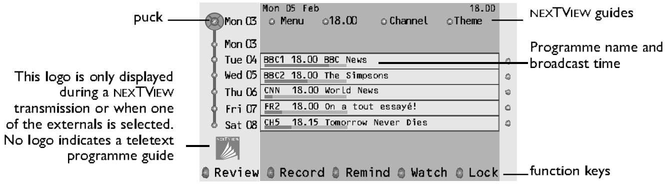
Press the 📖 key on the remote control to call the NEXTVIEW/Teletext guide.
A menu appears with the message **One moment please.** After a while you obtain:
- a NEXTVIEW page, if the selected channel broadcasts this service (the NEXTVIEW logo is displayed),
- a teletext page, if the selected channel does not broadcast NEXTVIEW,
- **No information available** is displayed if neither NEXTVIEW nor teletext are transmitted. In this case, select another channel.

Select TV channels by theme

If NEXTVIEW with defined theme is broadcast, it is possible to quickly select TV programmes with the P◂P key. See Setup, General menu, Smart surf, p. 10.

Display of a NEXTVIEW page

The information is set by the channel that transmits the NEXTVIEW service. See also Setup menu, General, NEXTVIEW provider, p. 10.


puck
NEXTVIEW guides
Programme name and broadcast time
This logo is only displayed during a NEXTVIEW transmission or when one of the externals is selected. No logo indicates a teletext programme guide
function keys
Menu
18.00
Channel
Theme
Review
Record
Remind
Watch
Lock

Mon 05 Feb 18.00
Mon 03
Mon 03
Tue 04 BBC1 18.00 BBC News
Wed 05 BBC2 18.00 The Simpsons
Thu 06 CNN 18.00 World News
Fri 07 FR2 18.00 On a tout essayé!
Sat 08 CH5 18.15 Tomorrow Never Dies

Picture/NEXTVIEW - Teletext Guide

❶ Press the 📖 key. Press the 12 key to show NEXTVIEW-Teletext Guide on the right of the screen.
❷ Use the cursor keys to select a TV channel.
❸ Press the 12 key to switch off dual screen.

NEXTVIEW guides

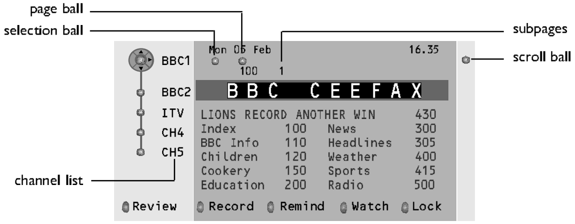
❶ Use the cursor key left/right to select **Time, Channel, Theme**, the **Date** guide.
The **Time guide** provides an overview of all programme titles active in the selected time block. The **Channel guide** provides an overview of all programmes that are broadcast by a single channel during one day. With the **Date guide** you can choose a specific date. The **Theme guide** displays a list of all programmes at the selected date, that matches with the selected category.
Going through the menu guide, the TV is collecting the sorting criteria to finally display a list of programme events.
❷ Press the **OK** key to select the guide type.
❸ Move the puck down and to the right to select the programmes.
If available a summary or commentary on the programme is displayed at the bottom of the screen.
❹ Use the cursor up/down to scroll through the programmes.

Teletext Guide

❶ Enter with the digit keys, the teletext page number that contains the programme information for the current channel.

❷ Press the cursor right to move the puck over the selection ball.

❸ Use the cursor up/down to scroll through the different programmes.



```
Mon 05 Feb                       16.35
  100    1
         B B C   C E E F A X
LIONS RECORD ANOTHER WIN         430
Index       100   News           300
BBC Info    110   Headlines      305
Children    120   Weather        400
Cookery     150   Sports         415
Education   200   Radio          500
Review   Record   Remind   Watch   Lock
```

- If the selected programme contains a page number with an optional subcode referring to a page with more info about the programme, press the **OK** key to display the information. Press the **OK** key again to return to the programme guide page.
- If the selected programme guide page satisfies the VPT requirements,
- it will be possible to record, remind, watch or lock programmes:
- the TV will remember the last selected teletext page number of that channel that contains programme guide information and indicates which programme starts at what time. Every time you press the ▤ key, the teletext programme guide page of the selected TV channel will be available.
- When necessary you can select the subpage number by moving the cursor to the pageball and pressing right.

Note: You must enter the teletext pagenumber for each channel. You can change the channels also by moving the cursor up/down in the list in the left of the page.

Basic functions

Press one of the grey ▶▶, red ●, green ◀◀, yellow ■ or blue ▶ keys to activate a NEXTVIEW or Teletext Guide function. The keys appear in grey if the function is not available.

Review: this menu provides a list of programmes that are marked as reminders, those that have to be recorded and those that are locked. This menu can be used to change or remove marked programmes.

Record: to programme the recording of the video recorder (if it has a NEXTVIEWLink function and is connected to **EXT. 2**).

Remind: automatically switch on the TV if it is in standby or by displaying a message if the TV is on.

Lock: to lock certain programmes to prevent recording or watching.

For the functions Record, Remind or Lock, a small menu pops up in which you can choose the interval: once, daily or weekly, or clear an earlier made record, remind or lock setting. The default interval is set to **Once**. To confirm the frequency, press the **OK** key.

Watch: to watch the selected and currently broadcast programme.

Acquisition and updating of NEXTVIEW information

Acquisition and updating of NEXTVIEW is done when you are watching the TV channel of the selected NEXTVIEW provider, see Setup menu, p. 10, or when the TV is switched to standby.

Acquisition of fresh data will happen once during the night.

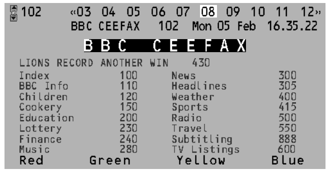
Note: it may be necessary to put the TV in standby mode when all NEXTVIEW information is outdated, e.g. when returning from holiday.

Teletext

Most TV channels broadcast information via teletext. This TV has a 1200 pages memory that will store most broadcasted pages and subpages to reduce waiting time. After each programme change, the memory is refreshed.

Switch Teletext on and off

Press ▤ to switch the teletext on.



```
102     «03 04 05 06 07 08 09 10 11 12»
        BBC CEEFAX  102  Mon 05 Feb  16.35.22
           B B C   C E E F A X
LIONS RECORD ANOTHER WIN   430
Index         100      News          300
BBC Info      110      Headlines     305
Children      120      Weather       400
Cookery       150      Sports        415
Education     200      Radio         500
Lottery       230      Travel        550
Finance       240      Subtitling    888
Music         280      TV Listings   600
Red      Green       Yellow       Blue
```

Select a Teletext page

- Enter the desired page number with the digit keys, the cursor keys up/down, left/right or with the **-P+** key.
- Select the options at the bottom of the screen with the colour keys.

Previously selected teletext page

(Only possible in case there is no list of favourite teletext pages available. See p. 20.)

Press the P◂P key.

Select the index teletext page

Press the grey colour key ▶▶ to display the main index (usually p.100).

Only for T.O.P teletext broadcasts :

Press ⓘ. A T.O.P. overview of the teletext subjects available is displayed.

Select with the cursor up/down, left/right the desired subject and press the **OK** key.

Not all TV channels broadcast T.O.P. teletext.

Select subpages

When a selected teletext page consists of different subpages, a list of available subpages appears on the screen.

Press the cursor left or right to select the next or previous subpage.

Enlarge a Teletext page

Press ⊞ repeatedly to display the upper teletext part, the lower teletext part and then to return to the normal teletext page size.

When the teletext page is enlarged, you can scroll the text, line by line using the cursor up/down.

Picture/Teletext-Active screen selection

When in dual screen picture/teletext (⧉ key), enter the desired page number with the **-P+** key, then press the **MENU** key, then select the left screen (with the blue ball at the top).

You can now select a compressed or full screen view of picture/teletext with the ⊞ key.

Hypertext

With hypertext you can quickly jump to a pagenumber or search for a specific word shown on the current teletext page.

❶ Press the **OK** key to highlight the first word or a number on the page.

❷ Use the cursor up/down, left/right to select any other word or number you want to search for.

❸ Press the **OK** key to confirm. The search starts. A message appears at the bottom of the screen to indicate the searching, or that the word or page is not found.

❹ Use the cursor up to exit hypertext.

Teletext menu

(only available in full screen teletext mode)

❶ Press the **MENU** key to activate the menu.

❷ Press the cursor up/down to select the menu items.

❸ Press the cursor right to activate.

Reveal

Reveals/conceals hidden information on a page, such as solutions to riddles and puzzles.
Press the cursor right to activate.

Favourite

This list contains up to eight favourite teletext pages. Only the pages of the current channel can be selected.

❶ Press the cursor right to enter the list.

❷ Press the cursor right again to add the current page or to select one of the favourite pages to the list.

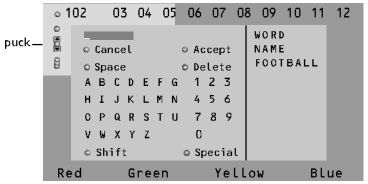
❸ Press the **MENU** key to watch the page.

❹ Use the P⁴P key to browse through the list of favourite pages.

Search

Selecting a word

On the keyboard on screen you can type in a random word you want to search for in the teletext pages. Whether upper- or lowercase is used has no influence.



❶ Press the cursor right to enter the keyboard.

❷ Press the cursor left/right, up/down to select the characters, words or functions.

❸ Press the **OK** key to confirm each character selected.

❹ Select **Cancel** to cancel the word; **Space** to enter a space; **Delete** to delete the last character selected; **Shift** to switch between lowercase or capital characters; **Special** to display special characters on the keyboard and press the **OK** key.

❺ Press the cursor left repeatedly to return to the Teletext menu again.

Searching a word

❶ Type in the word on screen or select a word from the history list on the right and press **OK.**

❷ Select **Accept** and press **OK** again. The message Searching appears.

❸ To cancel the searching or to search for a new word, select **Keyboard** and press **OK.**

❹ When a word is not found, a message appears. When the word is found, it is highlighted in the teletext page. To continue the search, press the **OK** key.

Cycle subpages *(if available)*

Makes the subpages cycle automatically.
Press the cursor right to activate and to de-activate again.

Timed page

To display a specific page from a selected TV channel at a certain time.

❶ Press the cursor right and select **Yes** or **No.**

❷ Enter the time and pagenumber with the cursor keys or the digit keys.
Note: Teletext does not have to remain switched on, but you should watch the TV channel you have selected the specific page from.

❸ Press the cursor left to return to the TV menu again.

Language

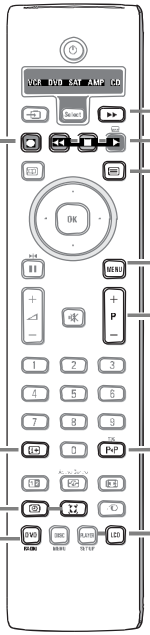
If the displayed characters on screen do not correspond with the characters used by the teletext broadcaster, you can change the language group here.
Select **Group 1** or **Group 2** with the cursor right.

Press the **MENU** key to leave the Teletext menu.

RDS radio function keys

When in RDS radio mode

Note: Remote control info is not available.



● **Programming radio stations** (p. 22)

◀◀ ▶▶
Press to tune the radio to a station with sufficient reception.

Press to stop programming radio stations.

▤ Press if you want to label radio stations without RDS reception or if you want to alter a detected RDS name. Use the cursor up/down, left/right keys and press **OK** to confirm.

[i+] Press repeatedly to select the display information mode: programme **NAME**, the timed **FREQUENCY**, the programme **TYPE** or **TEXT** for messages broadcast by the radio station.

⏲ Clock on/off

Press to select another available surround mode.

DVD Press repeatedly to select Radio, TV or DVD mode.

MENU
Press to select the sound menu.

P **Radio station selection**
Press P+/- to select the programmed radio stations.

P⁴P Press to select the previous selected radio station.

LCD
LCD tilt on/off

Switch to the RDS Radio mode

Press the **DVD/RADIO** key on the remote control repeatedly until the RDS Radio mode is selected. The screen is blanked and, if the received radio station transmits RDS data*, the RDS indicator on the display lights together with the available information about the radio station tuned.

**RDS, Radio Data Systems, is a service that allows FM stations to show additional information. If you are receiving a RDS station, the RDS icon and the station name are displayed.*

Tuning to radio stations

To find a new frequency hold down the ◀◀ or ▶▶ key on the remote control until the frequency starts to change. The radio automatically tunes to a station with sufficient reception.

If a FM station is received in stereo, stereo is displayed. To tune to a weak station, briefly and repeatedly press the ◀◀ or ▶▶ key until you have found optimal reception.

Programming radio stations

You can store up to a total of 50 radio stations.

Automatic programming

Press the ● key on the remote control for about 3 seconds. **SEARCH** is displayed and all the available stations are programmed (overriding all former programmed radio stations). The system will store first the RDS stations with a strong enough signal, then the RDS stations with a weaker signal and finally the non RDS stations.

Note:

- *to stop the automatic installation, press the ■ key. All stations before the stop, are stored into the memory.*

Manual programming

❶ Briefly press the ● key on the remote control. The current station number starts flashing and the station name, in case of a RDS station, or the tuned frequency is displayed.

❷ Hold down the ◀◀ or ▶▶ key to start the search for a new radio station. The search will stop on the next radio station and display the tuned frequency which will eventually be replaced by the detected RDS name.
Note: briefly and repeatedly press the ◀◀ or ▶▶ key to fine tune the frequency if necessary.

❸ Use the P- or + key or the digit keys to select the station number where you want to store the new radio station.

❹ Press the ● key to store the new radio station on the selected station number.

❺ Repeat ❶ to ❹ to store another radio station.

Note: To stop the manually installation, press the ■ key. Nothing is stored and everything is restored to the radio status just before entering the manual installation mode.

Give name

❶ Select the station number of the radio station you want to assign a name (for stations without RDS reception) or to change the name.

❷ Press and hold the ▤ key on the remote control for about 3 seconds. The cursor flashes on the first of 8 characters.

❸ Press the cursor up/down to change the character.

❹ Press the **OK** key to confirm the new name.

Note: To erase a station name:

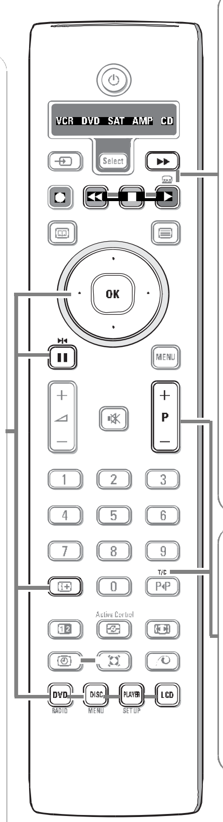
- *Select the station number you want to erase the name of.*
- *Press and hold the ▤ key for about 3 seconds.*
- *Press and hold the key for about 3 seconds.*
- *The message **DELETED** appears and the RDS name or the frequency is displayed.*

DVD/Audio CD function keys

When in DVD mode

Note: Remote control info is not available

To reduce energy consumption, it may take some time for the DVD player to become active.



Cursor keys

- Press cursor up to freeze the picture. Press again to move to the next frame.
- Press cursor down repeatedly to slow play down to 1/2, 1/4 or 1/8 speed.
- Press cursor left/right repeatedly to fast rewind/forward at x4 or x32 speed.

❚❚/▶❙◀ Freeze - Frame

Press ❚❚ or the cursor up to freeze the picture. Press again to move to the next frame.
Pause playback in case of an audio CD.

[i+] Press to display information about the current disc.

DVD

Press repeatedly to switch to dvd mode.

DISC

Press to summon the menu of the DVD disc.
Its contents are entirely dependent on the DVD disc. It allows access to different sections such as choice of language, direct access to scenes, bonus materials, etc. Use the cursor keys to navigate through the menu and press the **OK** key to confirm.

In case of a picture CD, 4 pictures are displayed at once. Press the **-P+** keys to display a previous/next series of pictures. Select a picture with the cursor keys and press the **OK** key to display a picture full screen.

PLAYER/SETUP

DVD setup menu, p. 25

LCD

Automatic LCD tilt on/off.

▶ Play

Once a disc is loaded, playback starts automatically. Certain discs may ask you to make a selection from a menu.
Press ▶ to resume play after freezing the picture, stopping playback, switching to standby or ejecting the disc.
Press ▶ to start playback of an audio CD or picture CD. Press again to start a slide show in case of a picture CD.
Note: When temporarily switching to TV mode, and switching back to DVD mode within 10 minutes, the DVD will automatically resume.

Stop playback

The default screen appears and gives information on the player status.

◀◀ ▶▶ Fast forward and rewind

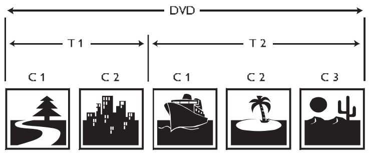
Press (or the cursor left/right) to fast forward or rewind at x4 or x32 speed or x8 speed in case of an audio CD. Press ▶ to return to normal speed.

P Press to go to the previous or next chapter in case of a DVD, the previous or next track in case of an audio CD, the previous or next picture in case of a picture CD.

T/C Title/Chapter

DVD discs are divided into different chapters to allow certain scenes to be accessed directly. Press the **T/C** key to access the Title or Chapter menu directly.

Introduction to DVD Video



The Universal DVD Video Standard offers some unique features, such as selection of different sound tracks for different languages, different subtitle languages and even multiple camera angles (disc dependent).
Depending on the material on the disc (a movie, video clips, drama series, etc.) the disc may have one or more titles which can consist of multiple chapters (also called scenes).

Supported disc formats

The built-in DVD player allows you to play DVD Video discs (including DVD+R and DVD+RW) as well as Video-, Super Video-, Audio-, MP3- and JPEG picture CDs (including CD-R and CD-RW CDs). The discs can be recognised by their logo on the packaging.

Note: DVD discs and players are designed with regional restrictions. Before playing a disc, make sure the disc is the same zone as your player. The region code of this DVD player is 2.

MP3 disc properties

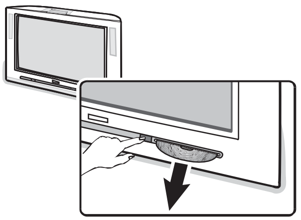
Your built-in DVD player supports the following MP3-CD format (ISO9660)

- Max. 30 character filenames
- Max. levels of nested directories: 8
- Max. ALB number: 32
- VBR bit-rate support
- Supported MP3 sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz
- Supported MP3 bit-rates: 32, 64, 96, 128, 192, 256 kbps
- Following formats are not supported: .WMA, .AAC, .DLF, .M3U, .PLS

Additional notes:

- Chinese filenames are not supported.
- The CD-session must be closed.
- Only the first session of a multi-session CD is supported.
- CDs in UDF format are not supported.
- In compliance with the SDMI, digital audio out is muted while playing MP3-CDs.
- The disc reading time may exceed 10 seconds due to a large number of songs on the disc.

Loading / removing a disc



Loading a disc

Insert your disc in the slot with the label side facing up. The player will pull the disc in automatically.

Note: it may take a few seconds before the disc is read. Please wait until the reading is finished.

Warning: Do not insert 8 cm (3 inch) discs or a malfunction may occur.

Removing a disc

Press the DVD button located on the front of the TV.
The player ejects the disc.
Remove the disc.

The DVD Player Menu

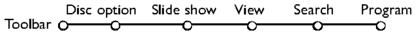
This menu allows you to access all the special functions of the DVD player.

❶ Press the **PLAYER SETUP** key on the remote control.

❷ Use the cursor left/right up/down to go through the options in the menu and confirm your selection with the **OK** key.

❸ Press the **PLAYER SETUP** key again to switch off the menu.

Toolbar



Note: Dependent on the kind of disc played, the availability of menu options may differ.

Disc option

- **Disc Navigation**: to access the different chapters, tracks or pictures available on the disc.
- **Subtitle and Audio**: to choose the subtitling language and audio language.
  The 🕮 key on the remote control allows you to change the subtitling language directly.

Slide show *(Available only with a picture CD (only JPEG-pictures supported).*

In this menu you can select the following slide show options:

- **Picture time**: to set the duration that the picture will be shown on screen;
- **Transition time**: to set the duration that the transition effect will be shown on screen.
- **Transition effect**: to select the transition effect between the pictures.

View

- **Angle**: some DVDs include sequences recorded from several camera angles. Generally a special icon will appear. Use the cursor up/down to select the angle.
- **Scan**: scanning plays the first 10 seconds of each track on the disc. To continue playback at your chosen track, press ▶.
- **Rotate** (only with a picture CD): the picture can be rotated either clockwise or counterclockwise by 90 or 180 degrees.

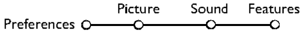
Search

- **Time search**: use the digit keys to enter a precise time to go to. Press **OK** or the ▶ key to resume at the indicated time.
- **Fast motion and Slow motion**: use the cursor left/right to select the desired speed. To resume normal speed, press ▶.
- **Frame by frame**: the image freezes. Use the cursor left/right to move backwards or forwards frame by frame. Press ▶ to resume normal play.

Program

See 'Programming favourite tracks' on p. 26.

Preferences



Picture

- **Video shift**: to move the image horizontally.

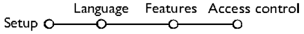
Sound

- **Night mode**: optimises the sound dynamics for low volume listening

Features

- **Help-line**: when set to on, a navigation help-line appears.

Setup



Language

- **Default audio**: to define the preferred language for the soundtracks of DVD films.
- **Default subtitle**: to define the preferred language for subtitles on DVD films.
  Note: If the preferred language is available on the disc, it will be selected by default. If not, the first language on the disc will be activated.

Features

- **PBC (Playback Control)**: to activate or deactivate the possibility to directly select a title on certain Video- or Super Video-CDs.

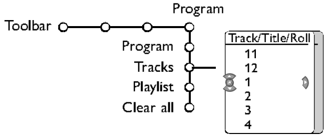
Access control

- **Disc lock**: see p. 26.

Programming favourite tracks

This function allows you to programme a selection of your favourite audio tracks from an Audio CD or your favourite chapters from a DVD into the memory.
When the Program function is active only the programmed audio tracks or DVD chapters will be played.

❶ Press the **PLAYER SETUP** key on the remote control.



❷ In the Toolbar, Program menu select **Tracks** using the cursor left/right up/down.

❸ Move the cursor right to open the list of tracks, titles or rolls.
Move the cursor up/down to select a track, a title or a roll.
Press the cursor right to open an overview of chapters or pictures.
Move the cursor up/down to select a chapter or picture.

❹ Press the **OK** key to confirm.

❺ Repeat steps ❸ and ❹ for each favourite track, chapter or picture you wish to program. If you wish you can repeat the same track, chapter or picture several times. You have a maximum of 20 favourites per disc.

❻ Press the **PLAYER SETUP** key to exit the menu. The favourite tracks will begin playing automatically.

Access Control / Disc Lock

This function allows you to lock/unlock the DVD player.

❶ Press the **PLAYER SETUP** key.

❷ In the Setup menu, select **Access Control**.

❸ Press the cursor down and enter your secret code.

❹ Press the cursor down to select **Disc Lock** and switch the Lock **On** or **Off** with the cursor right.

❺ Press the **PLAYER SETUP** key to exit the menu.

Play authorisation

When the Disc Lock function is switched on in the Setup, Access Control menu, you will be asked to enter your code to authorise the playing of the DVD or Video-CD.

❶ Insert a disc.

❷ Enter your secret code.

❸ Select **Play once** or **Play always.**

- **Play once**: the disc can be played as long as it is in the player and the television remains on and in DVD mode.
- **Play always**: the disc will become child safe (authorised) and can always be played, even if the Child lock is set to on.
  Note: When a disc has been labelled Play always you will not be asked to enter your code any longer.

The player can memorise a list of 120 child safe discs. When the list is full and a new disc is added, the last disc in the list is removed. Double sided DVDs and Video-CDs with multiple volumes may include a different identification for each side or volume. In this case you will have to authorise each side or volume separately.

Removing play authorisation

❶ Insert a disc. Playback starts automatically.

❷ When the ☺ symbol appears on screen, press the ■ key. The ☺ symbol appears and the disc is now deauthorised.

Forgotten your secret code ?

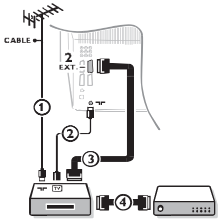
See TV Setup, General, p. 11.

Connect Peripheral Equipment

There is a wide range of audio and video equipment that can be connected to your TV.
The following connection diagrams show you how to connect them.

Note: ***EXT. 1*** *can handle CVBS and RGB,* ***EXT. 2*** *CVBS, RGB and Y/C,* ***EXT. 3*** *and* ***EXT. 4*** *CVBS.*
It is preferred to connect peripherals with RGB output to ***EXT. 1*** *or* ***EXT. 2*** *as RGB provides a better picture quality.*
If your recorder is provided with the EasyLink function, it should be connected to ***EXT. 2*** *to benefit from the EasyLink functionality.*

Recorder (VCR+DVD+RW)

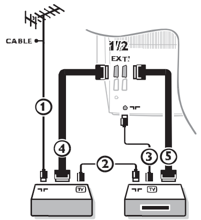


Connect the aerial cables ①, ② and, to obtain the optimum picture quality, eurocable ③ as shown.
If your recorder does not have a euroconnector, the only possible connection is via the aerial cable. You will therefore need to tune in your recorder's test signal and assign it programme number 0 or store the test signal under a programme number between 90 and 99, see Manual installation, p. 8.
See the handbook of your recorder.

Decoder and Recorder

Connect a eurocable ④ to your decoder and to the special euroconnector of your recorder. See also the recorder handbook. See Decoder, p. 11. You can also connect your decoder directly to **EXT. 1** or **2** with a eurocable.

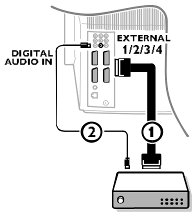
Other equipment (except digital sources)



❶ Connect the aerial cables ①, ② and ③ as shown (only if your peripheral has TV aerial in-/output).
Better picture quality can be obtained if you also connect eurocable ⑤ to **EXT. 2** and a eurocable ④ to **EXT. 1, 3** or **4.**

❷ Look for the test signal of your peripheral in the same way as you do for a recorder.
When a recorder is connected to ***EXT. 1*** *you can only record a programme from your TV. Only when a recorder is connected to* ***EXT. 2*** *it is possible to record a programme from your TV as well as from other connected equipment.*

Digital equipment (DVD, Digital Set Top Box, ...)

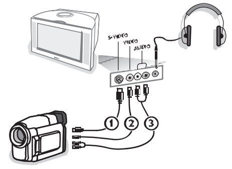


❶ Connect your digital equipment with a eurocable ① to one of the euroconnectors **(EXT 1, 2, 3** or **4)**, or with a cinch cable to the video input at the right side of the TV.

❷ To enjoy Multichannel surround sound from digital sources with a Dolby Digital audio output also connect an audio cable ② to one of the two digital audio in sockets of your TV. Make a selection in the Setup, Source menu, p. 11.

❸ According to the connected digital equipment, select **DVD, SAT, Game** or **Digital STB** in the Setup/Source menu. See p. 11.

Side connections



Camera or Camcorder

❶ Connect your camera or camcorder as shown.

❷ Connect to **VIDEO** ② and **AUDIO L** ③ for mono equipment. For stereo equipment also connect **AUDIO R** ③. S-VHS quality with an S-VHS camcorder is obtained by connecting the S-VHS cables with the S-video input ① and audio inputs ③.
Do not connect cable ① and ② at the same time. This may cause picture distortion !

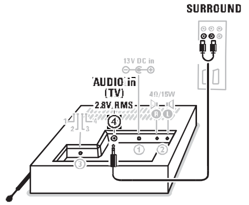
Headphone

❶ Insert the plug into the headphone socket 🎧 as shown.

❷ Press 🔇 on the remote control to switch off the internal loudspeakers of the TV.
The headphone impedance must be between 8 and 4000 Ohm. The headphone socket has a 3.5 mm jack.
In the Sound menu select **Headphone volume** to adjust the headphone volume.

Note:
When Dual screen/PIP is activated (see p. 16):
- if the main screen displays a TV channel picture, you hear the sound from the Dual screen/PIP picture through your headphone.

Wired rear loudspeakers

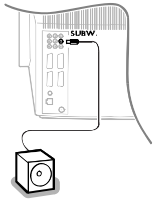


When no wireless RF surround sound is possible or when there is too much interference you can still enjoy Dolby Pro Logic II and Dolby Digital surround sound by connecting the wireless receiver box to the TV with a stereo cinch to stereo 3.5 mm jack cable.

❶ Connect the (not supplied) cable to the **AUDIO IN (TV)** connector ④ at the wireless receiver box and the **R** and **L** surround outputs at the back of the TV.

❷ Select **Off** in the Wireless surround menu item of the Setup, Speakers menu, p. 9.

Connect extra subwoofer



To enhance the sound reproduction of your TV you can connect an externally powered subwoofer (between 20 and 250 Hz).

❶ Connect the audio cable of the external subwoofer to the **SUBW.** socket at the back of your TV.

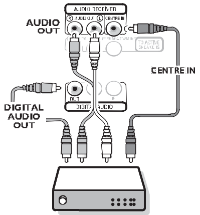
❷ Select **External** in the Setup, Speakers menu, Subwoofer, p. 9.

For details, please refer to the subwoofer's manual.

Connect audio receiver

Although your TV is already equipped with a Digital MultiChannel decoder you might want to connect your own MultiChannel surround receiver.

MultiChannel surround receiver with or without digital input connectors



❶ Connect a MultiChannel surround receiver to the **AUDIO OUT R** and **L** connectors at the back of your TV.

❷ If you want the loudspeakers of your TV to act as centre speaker, also connect an audiocable to the MultiChannel surround receiver **CENTRE OUT** connector and to the **CENTRE IN** connector at the back of your TV.

❸ Select **Centre input On** in the Source menu; See p. 11. The loudspeakers of the TV will now only produce centre sound.

❹ If necessary, adjust the volume level of the centre sound in the **Centre in volume** menu item of the Source menu. The overall volume has to be controlled via the MultiChannel surround receiver.

❺ In case of a Digital MultiChannel surround receiver, also connect the receiver to the **DIGITAL AUDIO OUT** connector.
*In this case the loudspeakers of your TV can not act as centre speaker. Select **Centre input Off** in the Source menu, see p. 11. Also see the instructions manual of your Digital MultiChannel surround receiver.*

To select connected equipment

Press the ⊕ key on the remote control repeatedly to select **EXT1, EXT2, EXT3, EXT4** or **SIDE** according to where you connected your equipment at the back or the right side of your TV.

Remark : Most equipment (decoder, recorder) carries out the switching itself, when it is switched on.

Cinema Link Surround receiver

See the separate supplied Cinema Link instruction manual

Attention: the sound info on screen will not correspond with the actual sound reproduction.

Recorder or DVD with EasyLink

The recorder (VCR or DVD+ RW) or DVD can be operated with the remote control via the Recorder or DVD menu on screen.

Recorder

◀◀	◀	■	▶	▶▶	●	⏏
Rwd	Play	Stop	Play	Ffw	Rec	Eject

DVD

◀◀	◀	■	▶	▶▶	⏏
Prev.	Play	Stop	Play	Next	Eject

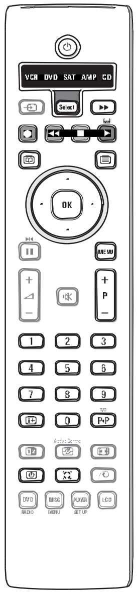
❶ Press the **MENU** key on the remote control.

❷ Select the **Recorder** or **DVD** menu with the cursor up/down.

❸ Press the cursor left/right, up/down to select one of the recorder or DVD functions.

The key ● for recording can be operated in the TV mode.
If your EasyLink recorder has the system standby function, when you press the ⏻ key for 3 seconds, both TV and the recorder are switched to standby.

Audio- and video equipment keys



This system remote control operates the following Philips equipment: TV, VCR, DVD, SAT (RC5), AMP (+TUNER), CD;

Press the **Select** key to operate any of the equipment indicated in the display. Another device can be selected by pressing Select repeatedly within 2 seconds. The led will blink slowly to indicate the device.
Press one of the keys on the remote control to operate the peripheral equipment.
To return to TV mode press **Select** while the led is blinking.
When no action is taken within 60 seconds, the remote goes back to TV mode.

*Note: When the **Select** key is pressed and hold for more than 2 seconds, the RC5/RC6 system select command is transmitted.*

⏻	to switch to standby
●	for record,
◀◀	for rewind (**VCR, CD**); search down (**DVD, AMP**)
■	for stop
▶	for play
▶▶	for fast forward (**VCR, CD**); search up (**DVD/AMP**)
🕮	to select your choice of subtitle language (**DVD**); RDS news/TA (**AMP**); to shuffle play (**CD**)
☰	to select a **DVD** title; RDS display (**AMP**); info on screen (**CD**)
i+	display information

MENU	to switch the menu on or off
- P +	for chapter, channel, track selection
0 to 9	digit entry
P◂P	tape index (**VCR**), select a DVD chapter, select a frequency (**AMP**)
⏲	VCR timer
⛶	surround on/off (**AMP, CD**)
cursor up/down	to select the next or the previous disc (**CD**)
cursor left/right	to select the previous or following track (**CD**) search up/down (**AMP**)

Additionally the DVD, SAT and CD indicator can be programmed to operate the DVD-R, SAT (RC6), CD-R instead.

❶ Press the **Select** key repeatedly until no LED is lit.

❷ To program **DVD-R**, press the **OK** key + digit 2.
To program **SAT (RC6)**, press the **OK** key + digit 4.
To program **CD-R**, press the **OK** key + digit 6.

From now on, when the corresponding (**DVD, SAT, CD**) indicator is selected, the remote control will operate your DVD-R, SAT (RC6) or CD-R.

*Note: To return to the modes programmed in the factory, either remove the batteries for a few minutes, or press the **OK** key + digit 1 (DVD mode); or + digit 3 (SAT-RC5) or + digit 5 (CD mode).*

Record with your recorder with EasyLink

In TV mode, it is possible to start a direct recording of the programme which is being displayed on the TV screen.
Continue to press the ● record key on the remote control for more than 2 seconds.

Note:
Switching programme numbers on your TV does not disturb recording !
*When recording a programme from a peripheral connected to **EXT. 1**, **3**, **4** or **SIDE**, you can not select another TV programme on the screen.*

Tips

Care of the screen	Clean the TV with a slightly damp soft cloth. Do not use abrasive solvent as it can damage the TV screen.
Poor Picture	• Have you selected the correct TV system in the manual installation menu ? • Is your TV or house aerial located too close to loudspeakers, non-earthed audio equipment or neon lights, etc.? • Mountains or high buildings can cause double pictures or ghost images. Sometimes you can improve the picture quality by changing the direction of the aerial. • Is the picture or teletext unrecognisable? Check if you have entered the correct frequency. See Installation, p. 8. • Are brightness, sharpness and contrast out of adjustment? Select Factory settings in the Setup, General menu, p. 10. • Sometimes poor picture quality is possible when having activated an S-VHS camera or camcorder connected to the right side of your TV and another peripheral is connected to one of the externals at the same time. In this case switch off one of the other peripherals.
No picture	• Is the aerial connected properly? • Are the plugs tightly connected in the aerial socket? • Is the aerial cable in good condition and does it have suitable plugs? • Press the **DVD** key on the remote control to switch to TV mode.
Digital distortion	The low quality of some digital picture material may be the cause of digital image distortion. In this case select the Soft setting using the Picture menu, Smart Picture, without changing the picture settings manually.
Moistured lense problem	The lense may cloud over when the DVD player is suddenly moved from cold to warm surroundings. Playing a CD/DVD is not possible then. Leave the TV in a warm environment for two hours before use, so the moisture can evaporate.
Cleaning DVD/ Audio disc	Some problems may occur because the disc inside the recorder is dirty. To avoid these problems clean your discs regularly with a cleaning cloth. Wipe the disc from the centre out. **Caution**: do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analogue discs. Do not use commercially available cleaning disc to clean the lens, as these discs may damage the optical unit.
No sound	• No sound on any channel? Check the volume isn't at minimum. • Is the sound interrupted with the mute key 🔇? Check if your speaker configuration corresponds with the selections made in the Setup menu, Speakers, p. 9. • No sound from the connected audio receiver? Select Centre input Off in the Source menu, see p. 11.
No Surround sound	• Perhaps the channel is not broadcasting good quality surround sound. • To avoid interfered picture the wireless transmitter might be automatically switched off. Use the wired back up solution, p. 28. • No sound from the rear speakers or the centre speakers? Select an appropriate surround mode, according to the broadcasted sound signal or adjust the volume or check if the wireless transmitter is properly connected. See Surround Modes, p. 14.
No solution found for your picture or sound problem ?	Switch your TV off and then on again once. Never attempt to repair a defective TV yourself. Check with your dealer or call a TV technician.

Remote control	• If your TV no longer responds to the remote control, the batteries may be dead. • Check if the remote control is in the correct mode. • You can still use the **MENU** key and the -/+ keys at the top of your TV.
Menu	Have you selected the wrong menu? Press the **MENU** key again to exit from the menu.
NEXTVIEW	**No NEXTVIEW info:** See Acquisition and updating of NEXTView information, p. 18. **Displayed time is wrong:** The broadcaster on programme number one does not transmit the correct local date and time. Use Reshuffle in the installation menu to place another broadcaster on programme number one.
Wireless Surround menu speaker system	• Are the wireless receiver box and the Surround Sound setting in the Setup switched to the same transmitting channel? • Put the wireless receiver box at least 15 cm above ground level. • The distance between the TV and the wireless receiver box should be > 2 m. • External RF equipment, mobile telephones or people moving around close to the TV may disturb the sound transmission. • When no RF surround sound is possible, or when there is too much interference, try to switch to another wireless channel or use the wired back up solution. See Wired rear loudspeakers, p. 28. • For wireless transmitter modules with a built in antenna: you must place the antenna in a vertical position.
Standby	Your TV consumes energy in the standby mode. Energy consumption contributes to air and water pollution. Power consumption: 1 W.

Personal Notes:

4. Mechanical Instructions

Index of this chapter:
1. Set Disassembly.
2. Service Positions.
3. Assy / PWB Removal.
4. Set Re-assembly.

Notes:
- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order.

4.1 Set Disassembly

4.1.1 Wireless Surround Transmitter Removal (if attached)

1. Remove the cable of the Wireless Surround Transmitter box (at the right side of this RJ45 plug you can find the release-hook of the lock-mechanism).
2. Pull the Wireless Surround Transmitter box backwards. It is clicked to the rear cover via three clamps.

4.1.2 Rear Cover Removal

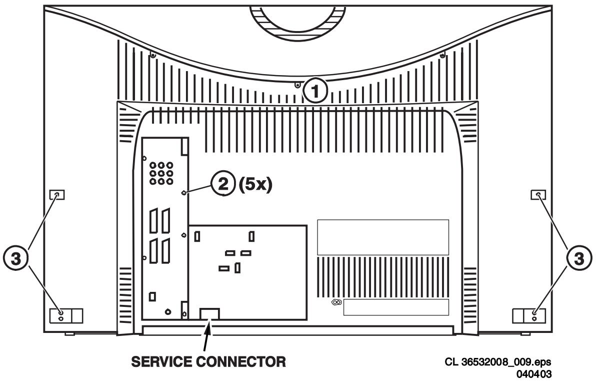


Figure 4-1 Removal of the rear cover.

Warning: Disconnect the mains power cord before you remove the rear cover.

First, unscrew the top cover plate:
1. Remove the fixation screw(s) [1] that secure the cover plate.
2. Leave the top cover plate in its original position.

To be able to access the electronics of the set, you must remove the rear cover:
1. Disconnect all communication cables.
2. Remove the fixation screws [2] of the rear I/O cover plate.
3. Remove the remaining fixation screws [3] of the rear cover.
4. Lift the top cover plate and remove the rear cover screws, hided by this top cover plate.
5. Unlock the securing clips at bottom side and remove the rear cover. Make sure not to damage any cable during this cover removal.

4.1.3 Sub-woofer Removal

Caution: Do not disconnect the loudspeaker cable from the subwoofer box when the set is operative, because the class-D amplifier cannot handle a change in load during operation.
It is no problem when the subwoofer is disconnected **before operation,** but a change from connected to disconnected **during operation** can damage the amplifier.

1. Disconnect the loudspeaker cable connectors at the top of the sub-woofer box.
2. Unlock he subwoofer bracket and at the same time pull the unit backwards.
3. Take out the sub-woofer unit including the bracket.

4.2 Service positions

4.2.1 DAF Module

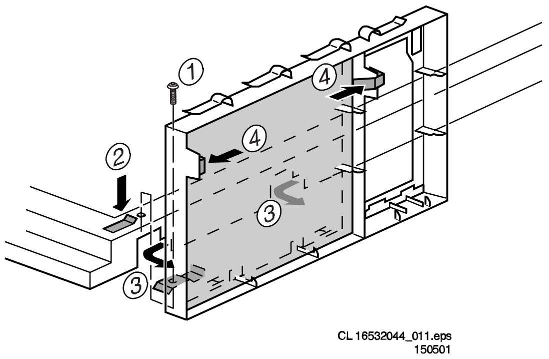


Figure 4-2 DAF module.

1. Remove the fixation screw (if present) as described in section: ‘Assy/PWB removal’.
2. Push down the fixation clamp, and pull the complete bracket at the same time loose from the LSP bracket. The module is now unlocked from the chassis and can be handled in several positions.

4.2.2 Small Signal Board (SSB)

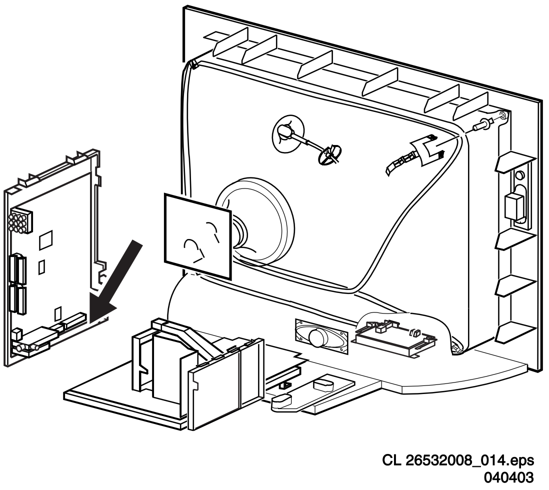


Figure 4-3 Small Signal Board removal.

1. Unlock the SSB bracket at the position as shown in the figure and place the board flat on the table.

Note: For good access to both sides it is possible to use two ‘IDE extended flat cables’, 48 cm, 40 fold (ordering code for one cable: 3104 311 05501). Or use the cables from service set 9965 000 14526.

4.2.3 LSP Component side

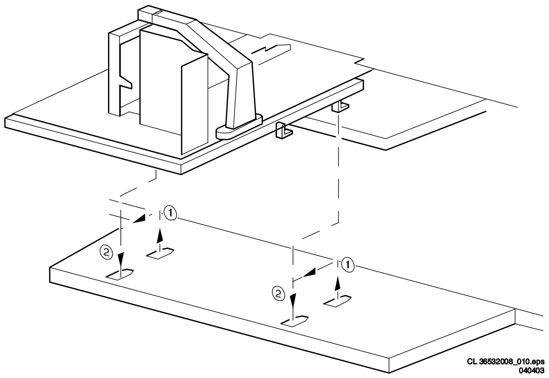


Figure 4-4 LSP unlock action.

1. Make sure the SSB bracket is unlocked and placed on the table.
2. Release the LSP bracket locking clips and pull it out of the mounting holes.

4.2.4 Solder Side LSP

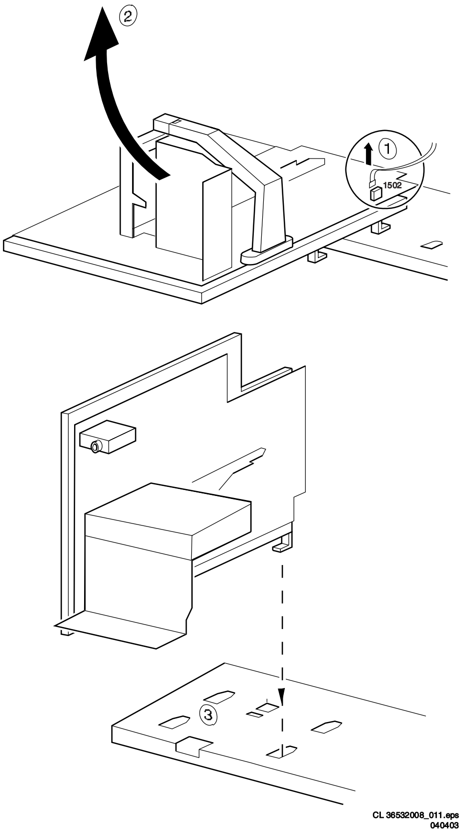


Figure 4-5 Place LSP in Service position.

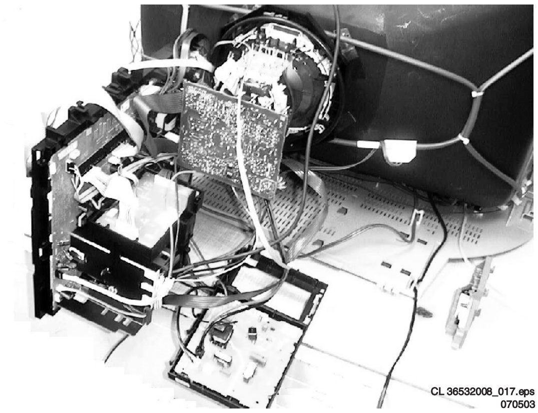


Figure 4-6 Service position LSP.

For better accessibility of the LSP, do the following (see also figure above):

1. Make sure the DAF module is uncoupled from the LSP bracket.
2. Unlock both LSP fixation clamps and pull it backwards to release it out of the mounting holes.
3. To disconnect the degaussing coil from the LSP, remove the cable from connector 1502 [1].
4. Release the wiring from their fixation clamps, in order to get room for repositioning the LSP.
5. Replace the two IDE flat cables by the IDE extended flat cable service set, (48 cm, 40 fold), no: 3104 311 05501.
6. Rotate the LSP 90 degrees clockwise [2], and place it in one of the bottom fixation holes as shown in the figure.
7. Hook the bracket in the first row of fixation holes of the bottom tray, see figure.

4.3 Assy / PWB Removal

Sometimes, it can be necessary to swap a complete assy or Printed Wiring Board (PWB). How that can be done is explained below.

4.3.1 Top Control Panel assy, Display Motor Mechanism, and LCD Display Removal

Remove the Top Panel assy:

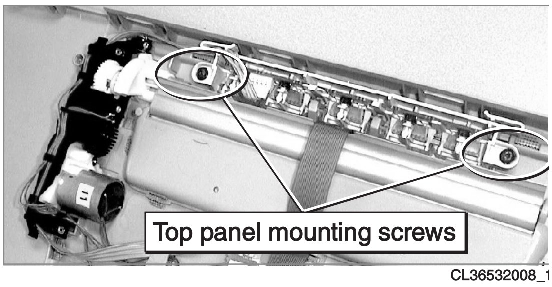


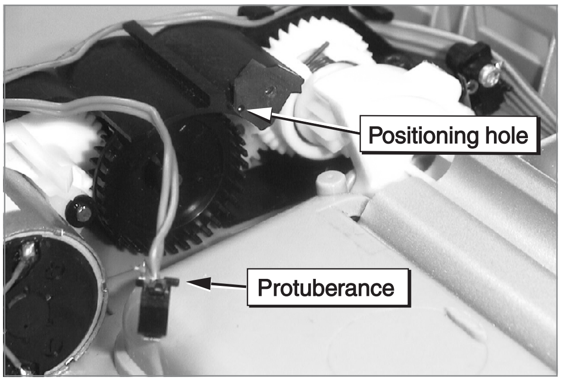
Figure 4-7 Top Panel mounting screws.

1. Disconnect both cables, which connect the Top Cover assy to the chassis and remove this Top Cover assy.
2. Unscrew both Top Panel assy mounting screws.
3. Grip the assy at both sides and lift it.

4.Disconnect the cable and take out the panel assy.

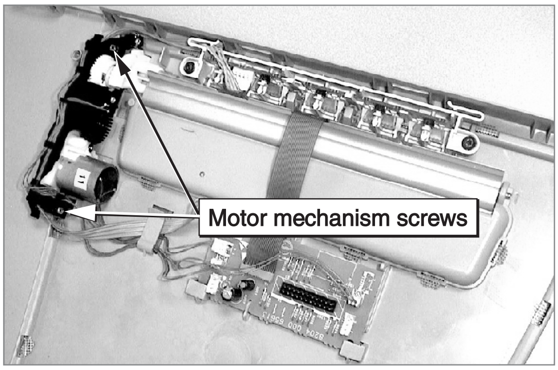
Remove the motor mechanism:

Note: To prevent micro switch damage, it is recommended to remove both micro switch mounting screws before removing the motor mechanism assy. Take extra care during micro switch mounting later on. Each micro switch has a small protuberance that should fit in a positioning hole.



CL36532008_134.eps
130503

Figure 4-8 Micro switch mounting.

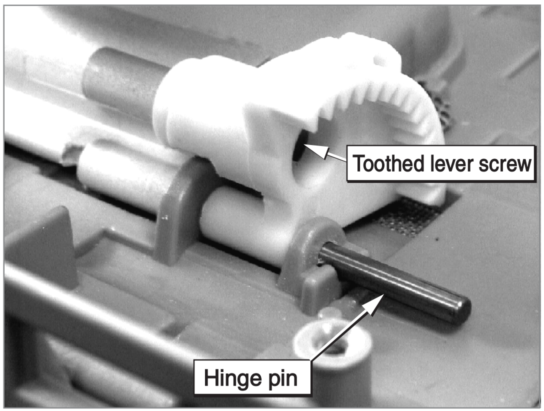


CL36532008_132.eps
120503

Figure 4-9 Motor mechanism screws.

1. Unscrew both motor mechanism mounting screws.
2. Remove the cable connector [1207], motor cable connector [1201] and both micro-switch connector cables [1204 and 1203] and next, remove the mechanism.

Remove the Top LCD panel assy

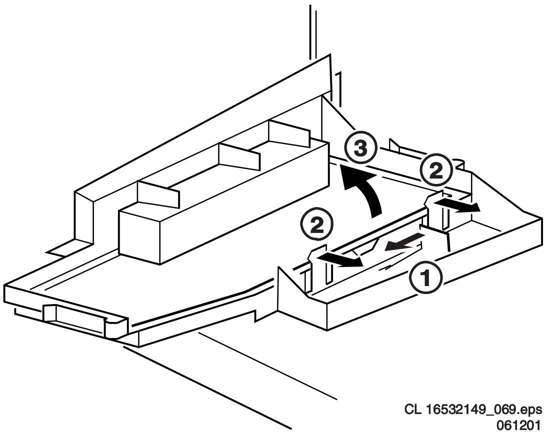


CL36532008_133.eps
120503

Figure 4-10 Toothed lever and hinge pins.

1. Fold out the LCD panel to gain access to the hinge pins.
2. Shift at both sides the hinge pins away to release the LCD panel hinges.
3. Remove the screw that secures the toothed lever to the LCD panel, see figure.
4. Remove the flat cable and next, remove the LCD panel assy.

4.4 Side-I/O Assy / Panel

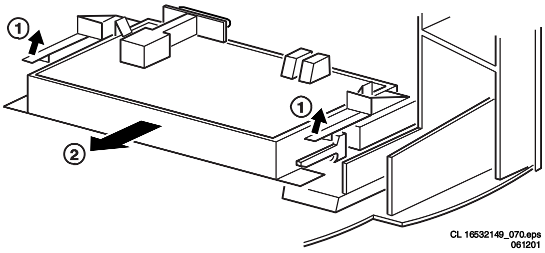


CL 16532149_069.eps
061201

Figure 4-11 Side I/O assy.

1. Release the snap-hook [1] with your finger.
2. At the same time, pull the assy backwards [2].
3. Release the two fixation clamps on the right side of the bracket (the board hinges at the left side).
4. Remove the board from the bracket.

4.4.1 Mains Switch Assy / Panel

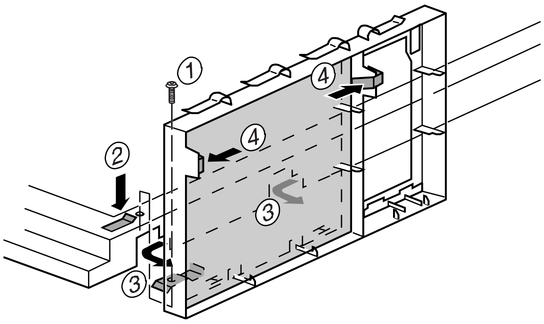


CL 16532149_070.eps
061201

Figure 4-12 Mains Switch Assy.

1. Release the two fixation clamps by pushing them upwards [1]. At the same time, pull the complete assy backwards [2]. **Note:** be aware that the degaussing coil/cable can hamper this.
1. Release the two fixation clamps on the two sides of the bracket (the board hinges at the connector side).
2. Remove the board from the bracket.
3. When the light guide (sitting in the cabinet, in front of the LEDs) is defective, you can replace it by pushing it forwards at the left side (it hinges at the right side, seen from the rear).

4.4.2 DAF Assy / Panel



CL 16532044_011.eps
150501

Figure 4-13 DAF-module.

1. Remove the fixation screw [1] (if the screw is present).
2. Disconnect the cables.
3. Push down the fixation clamp [2], and pull the complete bracket at the same time backwards. The module is now unlocked from the LSP bracket and can be removed.
4. To remove the PWB, release the PWB fixation clamps [4], in order to remove the print from the DAF bracket.

4.4.3 Auto-Scavem Assy / Panel

This panel is mounted in a bracket on the left side of the LSP. It is not necessary to remove the bracket. This is rather difficult.
1. Release the two PWB fixation clamps at top as well as at bottom side of the PWB.
2. Remove the cables.
3. Take out the Auto-Scavem PWB.

4.4.4 Small Signal Board (SSB)

1. Unlock the bracket and at the same time pull the bracket out of the locking holes.
2. Place the SSB bracket on the table.
3. To remove the PWB disconnect the cables, unscrew the mounting screw and take the PWB out of its bracket.

4.4.5 Large Signal Panel (LSP)

1. Unlock the LSP bracket as described in section "Service positions".
2. Disconnect the necessary cables.
3. Remove the PWB mounting screws and release the fixation clamps on the left of the LSP-bracket (the board hinges at the right side).
4. Remove the board from the bracket.

4.5 Set Reassembly

To reassemble the whole set, do all processes in reverse order.

Be sure that, before the rear cover is mounted:
- The mains cord is mounted correctly in its guiding brackets.
- All wires/cables are returned in their original positions. This is very important due to the large "hot" area of the set

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

1. Test points
2. Service Modes
3. Problems and solving tips (related to CSM)
4. ComPair
5. Error Codes
6. The blinking LED procedure
7. Protections
8. Repair tips
9. Software downloading

5.1 Test Points

The chassis is equipped with test points printed on the circuit board assemblies. They refer to the diagram letters.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements below) and the TV chassis. It offers the ability of structured troubleshooting, test pattern generation, error code reading, software version readout, and software upgrading.
Minimum requirements: a Pentium processor, Windows 95/98, and a CD-ROM drive (see also paragraph “ComPair”).

Note: In this chassis, the bi-coloured LED (red/green) is replaced by two separate LEDs, a blue and a red one. The blue LED is controlled by software (via ON_OFF_LED). The red LED will light in anti-phase to the blue, but with a time delay. This means that if the blue LED is blinking fast, the red LED will stay off, but after the blue LED is “OFF” long enough, the red LED will go “ON”.
So take care: In certain service modes (e.g. blinking LED, stepwise start-up, etc.) you must observe the blue LED and ignore the red LED.

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections.
- To start the blinking LED procedure.

Specifications

- Tuning frequency: 475.25 MHz for PAL/SECAM.
- Colour system: SECAM L for France or PAL B/G for the rest of Europe.
- All picture settings at 50 % (brightness, colour, contrast).
- All sound settings at 50 %, except volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
  – (Sleep) timer.
  – Child/parental lock.
  – Blue mute.
  – Automatic volume limiter (AVL).
  – Auto switch-off (when no video signal was received for 10 minutes).
  – Skip/blank of non-favourite pre-sets.
  – Smart modes.
  – Auto store of personal presets.
  – Auto user menu time-out.

How to enter SDM
Use one of the following methods:

- Use the standard RC-transmitter and key in the code **“062596”**, directly followed by the “MENU” button.
  Note: It is possible that, together with the SDM, the main menu will appear. To switch it off, push the “MENU” button again.
- Short for a moment the two solder pads on SSP print, with the indication “SDM”. These solder pads are present at both sides of the print. Activation can be performed in all modes, except when the set has a problem with the main-processor.
  Caution: If the SDM is entered via the pins, all the software-controlled protections are de-activated.
- Use the DST-emulation feature of ComPair.
- Use the “DEFAULT” button on the Dealer Service Tool (RC7150).

After entering this mode, “SDM” will appear in the upper right corner of the screen.

How to navigate
When you press the “MENU” button on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to exit SDM
Use one of the following methods:

- Switch the set to STANDBY via the RC-transmitter.
- Press the “EXIT” button on the DST.
- Via a standard customer RC-transmitter: key in “00”-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

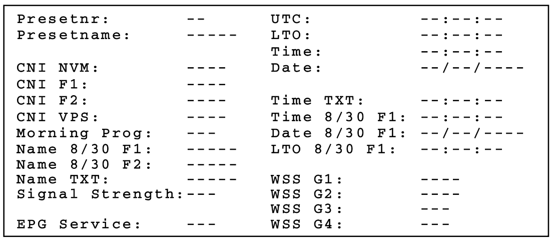
How to enter SAM
Use one of the following methods:

- Via a standard RC transmitter: key in the code **“062596”** directly followed by the **“OSD [i+]”** button. After entering SAM with this method a service warning will appear on the screen, you can continue by pressing any digit key on the RC.
- Short for a moment the two solder pads on SSP print, with the indication SAM. These solder pads are present at both sides of the print. Depending on the software version it is possible that the service warning will appear, you can continue by pressing any digit key on the RC.
- Use the DST-emulation feature of ComPair.
- Press the ALIGN button on the DST while the set is in the normal operation

After entering this mode, “SAM” will appear in the upper right corner of the screen.

Contents of SAM:

- **OPERATION HOURS.** Displays the accumulated total of operation hours (not the standby hours).
- **HARDWARE INFO**
  - **ROM VERSION.** Displays the date of the software and the software version of the ROM. (**example:** EM6EU1-1.0_01234 = AAABBC-X.Y_NNNNN).
    - **AAA**= the chassis name.
    - **BB**= the region: EU= Europe, AP= Asia Pacific PAL/Multi, AN= Asia Pacific NTSC, US= USA, LT= LATAM.
    - **C**= the language cluster number.
    - **X.Y**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y is the sub version number (a higher number is always compatible with a lower number).
    - **NNNNN**= last five digits of 12nc code software.
  - **SW VERSION RDS RADIO**. Displays the software version of the RDS radio (if RDS radio is present).
- **ERRORS** (followed by maximal 10 errors). The most recent error is displayed at the upper left (for an error explanation see paragraph “Error Codes”).
- **DEFECTIVE MODULE.** Here the module that generates the error is displayed. If there are multiple errors in the buffer, which are not all generated by a single module, there is probably another defect. It will then display the message “UNKNOWN” here.
- **RESET ERROR BUFFER.** When you press the “OK” button, the error buffer is reset.
- **ALIGNMENTS.** This will activate the “ALIGNMENTS” sub-menu.
- **DEALER OPTIONS.** Extra features for the dealers.
- **SERVICE OPTIONS.** Extra features for Service.
- **INITIALISE NVM.** When an NVM was corrupted (or replaced) in the former EM3 chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all pre-sets and alignment values are gone now, and option numbers are not correct. Therefore, this was a very drastic way. In this chassis, the procedure is implemented in another way: The moment the processor recognises a corrupted NVM, the “initialise NVM” line will be highlighted. Now, you can do two things (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, **before** initialising. This will give the Philips Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialise the NVM (same as in the past, however now it happens conscious).
- **STORE.** All options and alignments are stored when pressing the “OK”-button
- **FUNCTIONAL TEST.** All devices are tested via the “OK” button. Eventual errors are displayed in the error buffer. The error buffer is not erased, the content returns when this test is terminated.
- **DAILY MENUS.** With the “OK” button, you can go to the normal user menu. SAM is still active in the background. With the “MENU” button, you return from the user menu to SAM menu. This feature can be helpful to quickly change some settings in the user menu.
- **SW MAINTENANCE**
  - **UPGRADE.** More info see paragraph Software downloading.
  - **EVENTS.** Not useful for service purposes. In case of specific software problems, the development department can ask for this info.
  - **BDM INFO.** Broadcast Debug Menu info. The purpose of this menu is to debug the broadcast, **not** the TV. The menu gives an overview of what is received on the current preset. Following items are displayed:



```
Presetnr:       --        UTC:          --:--:--
Presetname:     -----     LTO:          --:--:--
                          Time:         --:--:--
CNI NVM:        ----      Date:         --/--/----
CNI F1:         ----
CNI F2:         ----      Time TXT:     --:--:--
CNI VPS:        ----      Time 8/30 F1: --:--:--
Morning Prog:   ---       Date 8/30 F1: --/--/----
Name 8/30 F1:   -----     LTO 8/30 F1:  --:--:--
Name 8/30 F2:   -----
Name TXT:       -----     WSS G1:       ----
Signal Strength:---       WSS G2:       ----
                          WSS G3:       ---
EPG Service:    ---       WSS G4:       ---
```

Figure 5-1 Broadcast debug menu overview

Table 5-1 Broadcast debug menu explanation

Item	Source	Description
Presetnr	Set	Presetnumber of the current selected preset.
Presetname	Set	Presetname of the current selected preset.
CNI NVM	Broadcaster	CNI number stored in NVM for the current preset.
CNI F1	Broadcaster	CNI number from transmitted Packet 8/30 Format 1.
CNI F2	Broadcaster	CNI number from transmitted Packet 8/30 Format 2.
CNI VPS	Broadcaster	CNI number from transmitted VPS line.
Morning Prog	Broadcaster	"ARD" or "ZDF" according to dedicated bit in 8/30 Format 1.
Name 8/30 F1	Broadcaster	Name extracted from status message of 8/30 Format 1.
Name 8/30 F2	Broadcaster	Name extracted from status message of 8/30 Format 2.
Name TXT	Broadcaster	Name extracted from TXT header.
Signal Strength	FBX	Noise figure measured for selected preset.
EPG Service	Set	EPG Service stored in NVM for current preset displayed as "TXT", "MCP", "SCP", "OCP".
UTC	Set	UTC (Universal Time Code formerly known as Greenwich Mean Time) used in the set.
LTO	Set	LTO (Local Time Offset) used in the set. Used by EPG for all Nextview displays. (= Time TXT header - Time 8/30 F1)
Time	Set	Current time running in the set. Was extracted at startup, then maintained by software.
Date	Set	Current date running in the set. Was extracted at startup, then maintained by software.
Time TXT	Broadcaster	TXT header time from the selected preset.
Time 8/30 F1	Broadcaster	UTC time from 8/30 Format 1.
Date 8/30 F1	Broadcaster	Date from 8/30 Format 1.
LTO 8/30 F1	Broadcaster	LTO from 8/30 Format 1.
WSS G1	Broadcaster	WSS Group 1 (Aspect Ratio) bits 0 1 2 3
WSS G2	Broadcaster	WSS Group 2 (Enhanced Services) bits 4 5 6 7
WSS G3	Broadcaster	WSS Group 3 (Subtitles) bits 8 9 10
WSS G4	Broadcaster	WSS Group 4 (Reserved) bits 11 12 13

How to navigate

- In SAM, you can select the menu items with the "CURSOR UP/DOWN" key on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys, it is possible to:
  - (De) activate the selected menu item.
  - Change the value of the selected menu item.
  - Activate the selected submenu.

How to exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter, or
- Switch the set to STANDBY via the RC-transmitter, or
- Press the "EXIT" button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer. The service technician can than ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.

The CSM is a read only mode; therefore, modifications in this mode are not possible.

How to enter CSM

Use one of the following methods:

- Press the "MUTE" button on the RC-transmitter **simultaneously** with the "MENU" button on the TV (top control) for at least 4 seconds.
- Key in the code "123654" via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

How to navigate

By means of the "CURSOR-DOWN/UP" knob on the RC-transmitter, you can navigate through the menus.

Contents of CSM

Customer Service Menu 1

- **SOFTWARE VERSION (example: EM6EU1-1.0_01234).** Displays the built-in software version. In case of field problems related to software, software can be upgraded (for more details, see paragraph Software downloading). You will find details of the software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication. This publication is generated four times a year.
- **FEATURE BOX.** The 12NC-number of the built-in Feature Box software
- **SET TYPE.** This information is very helpful for a helpdesk/workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set.
- **CODE 1.** Gives the latest 5 errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted. The last occurred error is displayed on the leftmost position. Each error code is displayed as a 3-digit number. When less than 10 errors occur, the rest of the buffer is empty (000). See also paragraph Error Codes for a description.
- **CODE 2.** Gives the first 5 errors of the error buffer. See also paragraph Error Codes for a description.
- VOLUME. Gives the last status of the volume as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Volume values can be changed via the volume key on the RC-transmitter.
- **BRIGHTNESS.** Gives the last status of the brightness as set by the customer. The value can vary from 0 (brightness is minimum) to 100 (brightness is maximum). Brightness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "BRIGHTNESS".
- **CONTRAST.** Gives the last status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 100 (contrast is maximum). Contrast values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "CONTRAST".
- **COLOUR.** Gives the last status of the colour saturation, as set by the customer. The value can vary from 0 (colour is minimum) to 100 (colour is maximum). Colour values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "COLOUR".
- **HUE.** Only relevant for NTSC-signals (e.g. some NTSC-DVD-discs).

Customer Service Menu 2

- **SHARPNESS.** Gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals, a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "SHARPNESS".
- **HEADPHONE VOLUME.** Gives the last status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Headphone volume values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "SOUND" and "HEADPHONE VOLUME".
- **DOLBY.** Indicates whether the received transmitter transmits Dolby sound ("ON") or not ("OFF"). Attention: The presence of Dolby can only be tested by the software on the Dolby Signaling bit. If a Dolby transmission is received without a Dolby Signaling bit, this indicator will show "OFF" even though a Dolby transmission is received.
- **SURROUND MODE.** Indicates the by the customer selected surround mode (or automatically chosen mode). In case the set is a Non-Dolby set, there will be displayed "0". If it is a Dolby-set then is displayed: "STEREO", "3 STEREO", "HALL", "3DSURROUND", "DOLBY PRO LOGIC" or "DOLBY DIGITAL". These settings can be influenced after pressing the "MENU" button and selecting "SOUND" and SURROUND MODE". It can also have been selected automatically by signaling bits (internal software).
- **TUNER FREQUENCY.** Indicates the frequency the selected transmitter is tuned to. The tuner frequency can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys for fine tune after opening the installation menu and selecting "INSTALL" and "MANUAL INSTALL".
- **DIGITAL OPTION.** Gives the selected digital mode, "100 HZ", "DIGITAL SCAN", "NATURAL MOTION", "DOUBLE LINES", or "PIXEL PLUS". Change via "MENU", "PICTURE", "DIGITAL OPTIONS".
- **CENTRE TRIM.** Indicates the difference between main volume and volume of centre speaker. Change via: "MENU", "SETUP", "SPEAKERS", and "CENTRE VOLUME" (not available when "Surround Mode" is set to "STEREO" or "HALL"). The value can vary from "-10" to "+10"
- **TV SYSTEM.** Gives information about the video system of the selected transmitter.
  - BG: PAL BG signal received.
  - DK: PAL DK signal received.

– I: PAL I signal received.
– L/La: SECAM L/La signals received.
– M: NTSC M signal received with video carrier on 38.9 MHz.

Customer Service Menu 3

- **BALANCE.** Indicates the balance settings, between “-50” and “+50”. Change via “MENU”, “SOUND”, and “BALANCE”. Not applicable for Dolby Pro Logic sets.
- **CENTRE MODE.** Indicates if centre mode is set “ON” or “OFF”. When centre mode is on, all TV speakers are used as one centre speaker. Change Centre mode via “MENU”, “SETUP”, “SPEAKERS”, and “CENTRE MODE”.
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), “OFF”, “MINIMUM”, “MEDIUM”, or “MAXIMUM”. Change via “MENU”, “PICTURE”, “DNR”
- **NOISE FIGURE.** Gives the noise ratio for the selected transmitter. This value can vary from 0 (good signal) to 127 (average signal) and to 255 (bad signal). For some software versions, the noise figure will only be valid when “Active Control” is set to “medium” or “maximum”.
- **SOURCE.** Indicates which source is used and the video/ audio signal quality of the selected source. (**Example:** Tuner, Video/NICAM) Source: “TUNER”, “EXT1”, “EXT2”, “EXT3”, “EXT4”, “SIDE”, “AV1”, “AV2”, “AV3” or “AV4”. Video signal quality: “VIDEO”, “S-VIDEO”, “RGB 1FH”, “YPBPR 1FH 480P”, “YPBPR 1FH 576P”, “YPBPR 1FH 1080I”, “YPBPR 2FH 480P”, “YPBPR 2FH 576P”, “YPBPR 2FH 1080I”, “RGB 2FH 480P”, “RGB 2FH 576P” or “RGB 2FH 1080I”. Audio signal quality: “STEREO”, “SPDIF 1”, “SPDIF 2” or “SPDIF”.
- **AUDIO SYSTEM.** Gives information about the audio system of the selected transmitter: “ANALOGUE MONO”, “ANALOGUE STEREO”, “PCM 2/0”, “DD 1/0”, “DD 2/0 LtRt”, “DD 2/0 L0R0”, “DD 2/1”, “DD 2/2”, “DD 3/0”, “DD 3/1”, “DD 3/2”, “DD 1+1”, “MPEG 1/0”, “MPEG 2/0”, “MPEG 2/0 LtRt”, “MPEG 2/1”, “MPEG 2/2”, “MPEG 3/0”, “MPEG 3/1”, “MPEG 3/2”, “MPEG 1+1” or “MPEG 2+2”.
- **TUNED BIT.** Gives information about the tuning method of the stored pre-set. If a channel is found via “automatic installation”, you will see the value “Yes”. When you change this (automatically found) frequency via “fine tune” adjustment (installation menu - manual installation), the displayed value will change to “No”. Therefore, when you see the value “No” in this line, it is an indication that the received channel is a non-standard signal (e.g. of a VCR).
- **SURROUND SPEAKERS.** Indicates if the surround speakers are present, “YES” or “NO”. Change via “MENU”, “SETUP”, “SPEAKERS”, and “SURROUND SPEAKERS”.
- **ON TIMER.** Indicates if the “On Timer” is set “ON” or “OFF” and if the timer is “ON” also displays start time, start day and program number. Change via “MENU”, “TV”, “FEATURES”, and “ON TIMER”.
- **PRESET LOCK.** Indicates if the selected preset has a child lock: “LOCKED” or “UNLOCKED”. Change via “MENU”, “TV”, “FEATURES”, “CHILD LOCK”, and “CUSTOM LOCK”.

Customer Service Menu 4

- **CHILD LOCK.** Indicates the last status of the general child lock: “UNLOCK”, “LOCK”, or “CUSTOM LOCK”. Change via “MENU”, “TV”, “FEATURES”, “CHILD LOCK”, and “LOCK”.
- **AGE LOCK.** Indicates the last status of the EPG rating for child lock: “OFF”, “4 YEARS”, “6 YEARS”, “8 YEARS”, “10 YEARS”, “12 YEARS”, “14 YEARS” or “16 YEARS”. This is only displayed if child lock is set to “CUSTOM LOCK”
- **LOCK AFTER.** Indicates at what time the child lock is set: “OFF” or e.g. “18:45” (lock time). This is only displayed if child lock is set to “CUSTOM LOCK”
- **CATEGORY LOCK.** Indicates the last status of the EPG theme childlock: “MOVIES”, “NEWS”, “SHOWS”, “SPORTS”, “CHILDREN”, “MUSIC”, “CULTURE”, or “SERIES”. This is only displayed if child lock is set to “CUSTOM LOCK”. It is possible that more than one value is shown.
- **PROGRAM CATEGORY.** Indicates the theme of the selected transmitter: “MOVIES”, “NEWS”, “SHOWS”, “SPORTS”, “CHILDREN”, “MUSIC”, “CULTURE”, or “SERIES”.
- **TV RATINGS LOCK.** Only applicable for US.
- **MOVIE RATINGS LOCK.** Only applicable for US.
- **V-CHIP TV STATUS.** Only applicable for US.

Customer Service Menu 5

- **V-CHIP MOVIE STATUS.** Only applicable for US.
- **OPTIONS 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **OPTIONS 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- AVL. Indicates the last status of AVL (Automatic Volume Level): “ON” or “OFF”. Change via “MENU”, “TV”, “SOUND”, “AVL”
- **DELTA VOLUME.** Indicates the last status of the delta volume for the selected preset as set by the customer: from “-12” to “+12”. Change via “MENU”, “TV”, “SOUND”, “DELTA VOLUME”.
- **SURROUND TRIM L.** Indicates the last status of “SURROUND LEFT VOLUME” as set by the customer: from “-10” to “+10”. Only available in Digital Dolby sets. Change via “MENU”, “SETUP”, “SPEAKERS”, “SURROUND L VOLUME.
- **SURROUND TRIM R.** Indicates the last status of “Surround Right Volume” as set by the customer: from “-10” to “+10”. Only available in Digital Dolby sets. Change via “MENU”, “SETUP”, “SPEAKERS”, “SURROUND R VOLUME.
- **FRONT SPKR DIST.** Indicates the last status of the distance to the front speakers as set by the customer: “1m”, “2m”, or “3m”,.... Change via “MENU”, “SETUP”, “SPEAKERS”, “TO FRONT”.
- **SURR. SPKR DIST.** Indicates the last status of the distance to the surround speakers as set by the customer: “1m”, ”2m”, or ”3m”,.... Change via “MENU”, “SETUP”, “SPEAKERS”, “TO SURROUND”.

How to exit CSM

Use one of the following methods:

- After you press a key on the RC-transmitter (with exception of the “CHANNEL”, “VOLUME” and digit (0-9) keys), or
- After you switch the TV-set “OFF” with the mains switch.

5.3 Problems and Solving Tips (related to CSM)

Note: Below described problems are all related to the TV settings. The procedures to change the value (or status) of the different settings are described above. New value(s) are automatically stored.

5.3.1 Picture Problems

Snowy/noisy picture

1. Check line 24 “Noise Figure”. In case the value is 127 or higher, and the value is also high on other programs, check the aerial cable/aerial system. For some software versions, the noise figure will only be valid when “Active Control” is set to “medium” or “maximum”.
2. Check lines 11 “Sharpness” and 24 “Noise Figure”. In case the value of line 11 is 3 or 4 and the value of line 24 is high (127 or higher), decrease the “Sharpness” value.

Picture too dark

1. Press “MENU”, “TV”, “PICTURE”, “SMART PICTURE”. In case the picture improves, increase the “Brightness” or the “Contrast” value. The new value(s) are automatically stored (in “personal” pre-set) for all TV channels.

2. Check line 7 “Brightness” and 8 “Contrast”. If the value of line 7 is low (< 10) or the value of line 8 is low (< 10), increase the “Brightness” or the “Contrast” value.

Picture too bright

1. Press “MENU”, “TV”, “PICTURE”, “SMART PICTURE”. In case the picture improves, decrease the “Brightness” or the “Contrast” value. The new value(s) are automatically stored (in “personal” pre-set) for all TV channels.
2. Check lines 7 “Brightness” and 8 “Contrast”. If the value of line 7 is high (> 40) or the value of line 8 is high (> 50). Decrease the “Brightness” value or increase the “Contrast” value.

White line around picture elements and text

1. Press “MENU”, “TV”, “PICTURE”, “SMART PICTURE”. In case the picture improves, decrease the “Sharpness” value. The new value is automatically stored (in “personal” pre-set) for all TV channels.
2. Check line 11 “Sharpness”. Decrease the “Sharpness” value. The new value is automatically stored for all TV channels.

No picture

Check line 27 “Tuned bit”. In case the value is “No”, install the required program again. Open the installation menu and perform manual installation.

Blue picture

No proper signal is received. Check the aerial cable/aerial system.

Blue picture and/or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Check line 9 “Colour”. In case the value is low (< 10), increase the “Colour” value. The new value is automatically stored for all TV channels.

No colours/colour lines around picture elements or colours not correct or unstable picture

1. Check line 20 “TV System”. If a “strange” system pops up, something has gone wrong during installation. Re-install the channel.
2. In case line 20 is “L”, the installed system for this pre-set is “France”, while “West Europe” is required. Install the required program again: open the installation menu and perform manual installation. Select system “West Europe”.

Menu text not sharp enough

1. Press “MENU”, “TV”, “PICTURE”, “SMART PICTURE”. In case picture improves, decrease the contrast value. The new value(s) are automatically stored for all TV channels.
2. Check line 8 “Contrast”. The value of line 8 is high (> 50). Decrease the contrast value.

5.3.2 Sound Problems

No sound from left and right speaker

Check line 6 “Volume”. The value is low. Increase the value of “Volume”. The new value(s) are automatically stored (in “personal” pre-set) for all TV channels.

Sound too loud for left and right speaker

Check line 6 “Volume”. The value is high. Decrease the value of “Volume”. The new value(s) are automatically stored (in “personal” pre-set) for all TV channels.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I^2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I^2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.
For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I^2C level. ComPair can access the I^2C bus of the television. ComPair can send and receive I^2C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I^2C busses of the TV-set.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extends. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.
  Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.*
  - Click on the “Panel” hyperlink to automatically show the PWB with a highlighted capacitor C2568.
  - Click on the “Schematic” hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 Stepwise Start-up

Under normal circumstances, a fault in the power supply, or an error during start-up, will switch the television to protection mode. ComPair can take over the initialisation of the television. In this way, it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem.
In sets with the Muppet IC present (dual screen functionality), step 2 is skipped.
Take notice that the transition between two steps can take some time, so give the set some time to reach a stable state. During the transition time the LED can blink strangely.

Stepwise start- up explanation
This is realised via ComPair and is very helpful when a **protection** is activated (see also chapter “Protections”).

Table 5-2 Stepwise start-up table

State	Description mode	Display LED	Enabled protection
0	Low power standby: 5V2/3V3 present, uP in standby-mode	On	None
1	High power Standby: TV-set in standby-mode	Wait 1s, flash 1 x	None
2	Main Power On: HOP in standby, 5V/8V present, I2C protections on, SSB is powered by standby-supply (5V/8V). Degaussing (12 s) has been activated, MSP is reset.	Wait 1s, flash 2 x	4 & 5
3	Initialized (Semi standby): most IC's are initialized, HOP still in standby	Wait 1s, flash 3 x	Plus 1, 6 & 18
4	HOP: HOP fully powered and working, EHT is present, rest of IC's initialized, black current stabilisation is off, picture is still blanked	Wait 1s, flash 4 x	Plus 2 & 16
5	On: TV-set operates, black current stabilisation is on, picture is unblanked.	Wait 1s, flash 5 x	

Note (*):
- When the set is in stepwise mode and, due to stepping-up, a protection is activated, the set will really go into protection (blinking LED). The set will not leave the stepwise-mode however. If state X is the state where the set went to protection, stepwise start-up will return to state X-1. At state (X-1) diagnostic measurements can be performed. Also, in the short time the set is in state X but not yet in protection, you can also do some measurements.
- Due to the initialisation process of the Muppet IC, step 2 is not available in sets with Muppet. In this case, step 2 and 3 become one step

5.4.4 How To Connect

1. First, install the ComPair Browser software (see the Quick Reference Card for installation instructions).
2. Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with “PC”) of the ComPair interface.
3. Connect the mains adapter to the supply connector (marked with “POWER 9V DC”) of the ComPair interface.
4. Switch the ComPair interface “OFF”.
5. Switch the television set “OFF” with the mains switch.
6. Connect the ComPair interface cable between the connector on the rear side of the ComPair interface (marked with “I^2C”) and the ComPair connector at the rear side of the TV.
7. Plug the mains adapter in a mains outlet, and switch the interface “ON”. The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
8. Start the ComPair program and read the “Introduction” chapter.

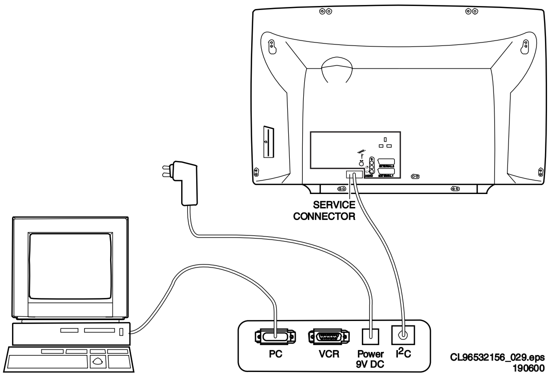


Figure 5-2 ComPair Interface connection

5.4.5 How To Order

ComPair order codes (EU/AP):
- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60110.
- SearchMan32 CD (update): 3122 785 60120.
- ComPair interface cable: 3122 785 90004.
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer Europe: 4822 727 21632.
- Transformer UK: 4822 727 21633.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.
When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.
To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

5.5.2 How to read the Error Buffer

Use one of the following methods:
- On screen via the SAM (only if you have a picture). Examples:
  - **0 0 0 0 0**: No errors detected
  - **6 0 0 0 0**: Error code 6 is the last and only detected error
  - **9 6 0 0 0**: Error code 6 was first detected and error code 9 is the last detected error

- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via ComPair.

5.5.3 How to clear the Error Buffer

Use one of the following methods:

- By activation of the “RESET ERROR BUFFER” command in the SAM menu.
- With a normal RC, key in sequence “MUTE” followed by **“062599”** and “OK”.
- When you transmit the commands “DIAGNOSE” - “99” - “OK” with ComPair (or with a DST).
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information.
If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).
There are various errors:

- I^2C device errors.
- I^2C bus errors.
- Protection errors.
- Errors not related to an I^2C device, but of importance:
  - **BLACK CURRENT LOOP (ERROR 28):** detection of a continuous fail of the black current stabilisation loop of the HOP.
  - **FALCONIC (ERROR 26):** at start-up, after initialisation of the PICNIC, the presence of the FALCONIC can be checked.
  - **EAGLE (ERROR 27):** at start-up, after initialisation of the PICNIC, the presence of the Eagle can be checked.

Table 5-3 Error Table

Error	Device	Description	Def. item	Defect. module indication	Diag
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
2	Hfail Protection	Horizontal Flyback protection	/	Horizontal Flyback	/
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5V	5V protection	/	+5V Supply	B5a
5	Supply 8V	8V protection	/	+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6	/	Slow I2C Blocked	/
7	TDA9330	HOP High-end Output Processor	7301	Video Controller	B4
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxxx	ITT sound processor	7A02	Audio module	B6a
16	FBX	Feature Box Protection	/	+3V (Fbx) Supply	B3
18	Fast I2C bus blocked	Spontaneous blinking error 18	/	Fast I2C Blocked	/
19	TDA8444	Auto Scavem DAC	7500	Auto Scavem	SC1
21	M62320P	PIP I/O Expander	7P56	Video Dual Screen	B15b
23	UV1316/...	PIP Tuner	1T02	Video Dual Screen	B13
24	SAB9081	PIP Muppet	7PA6	Video Dual Screen	B15c
26	SAA4992	Falconic	7718	+3V (Fbx) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (Fbx) Supply	B3c
28	Black current loop	Black current loop	/		/
29	PCF8574T	DVD I2C I/O Expander	7306	DVD Engine	T3
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
34	TDA932x	Second HIP	7P09	Video Dual Screen	B15a
63	MAS3529E	Dolby Digital Decoder	7A30	Digital Audio Module	B6b
64	SAA6588T	TDL RDS	7100	TDL (Radio)	T2
81	DPL4519	Dolby Prologic Decoder	7A63	Digital Audio Module	B6c
82	TDA7309D	Headphone processor	7A06		B6a
83	TEA6422 (1)	Source select matrix audio	7I17	Audio Source Select	B14d
84	TEA6422 (2)	Source select matrix audio	7I18	Audio Source Select	B14d
85	TEA6415	Source select matrix video	7I24	Video Source Select	B14a
86	P89C664	TDL μP Radio	7002	TDL (Radio)	T1
87	/	TDL 12V audio off	/	TDL (Radio)	T1
88	TEA5762	TDL FM Radio	7101	TDL (Radio)	radio
89	M24C32	TDL NVM Radio	7011	TDL (Radio)	T1
91	See extra info	TDL LCD	/	TDL (Radio)	T
92	See extra info	TDL Motor	/	TDL (Radio)	T
93	See extra info	DVD 3V3	/	DVD Engine	T3
96	PCF8574	HDD Interface	7022	Harddisk Module	TS
97	See extra info	HDD Engine	/	Harddisk Module	/
98	See extra info	HDD Fan	fan	Harddisk Module	TS

Note:
- Error codes 1, 6, or 18 are protection codes and in this case, supplies of some circuits will be switched "OFF". Also, in protection, the LED will blink the number of times equivalent to the most recent error code.
- Some errors are only for TDL-sets (EM6E AB) or sets with hard disk.

Extra info for certain errors:
- **Error 91:** If the TDL microprocessor gets an error from the LCD display, this will be reported to the OTC, and will log error 91 (only for TDL sets).
- Error 92: If one of the micro-switches of the LCD display is not closed within a timeout, the TDL microprocessor will report an error to the OTC, and error 92 will be logged (only for TDL sets).
- Error 93: If the 3V3 is not present in DVD mode, or is present when DVD is in stand-by, error 93 will be logged. The presence or absence of the supply voltage is detected via the I/O expander (schematic T3) (only for TDL sets).
- Error 97: There are 2 inputs to generate an error: The IO expander that checks the supply voltages and the HDD processor witch controls the hard disk itself. Both generate the same error: HDD error (only for sets with HDD).
- Error 98: via a control line of the HDD interface IC (7022) is sensed if the HDD fan is turning. In case the fan is not turning, the HDD will be switched off and error 98 will be logged (only for sets with HDD).

5.6 The Blinking LED Procedure

5.6.1 Introduction

Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the SDM is entered, the front LED will show (blink) the contents of the error-buffer. Error-codes > 10 are shown as follows:
- A long blink of 750 ms (which is an indication of the decimal digit),
- A pause of 1.5 s,
- "n" short blinks (where "n" = 1 - 9),
- When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- The sequence starts again.

Example: Error 12 9 6 0 0.
After activation of the SDM, the front LED will show:
- 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s,
- 2 short blinks followed by a pause of 3 s,
- 9 short blinks followed by a pause of 3 s,
- 6 short blinks followed by a pause of 3 s,
- 1 long blink of 3 s to finish the sequence,
- The sequence starts again.

Note: If errors 1, 6 or 18 occur, the LED always gives the last occurred error even if the set is NOT in service mode.

5.6.2 How to Enter

Use one of the following methods:
- Enter the SDM (only via soldering pads marked "SDM" on SSP). The blinking front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode).
- Transmit the commands "MUTE" - **"062500"** - "OK" with a normal RC. The complete error buffer is shown. Take notice that it takes some seconds before the blinking LED starts.
- Transmit the commands "MUTE" - **"06250x"** - "OK" with a normal RC (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... Take notice that it takes some seconds before the blinking LED starts.
- "DIAGNOSE X" with the DST (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... When x = 0 all errors are shown.

5.7 Protections

5.7.1 Introduction

This chassis has only one microprocessor (OTC), which remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. Therefore, in both Power-on as in Standby mode, the microprocessor is connected to this power supply.

If a fault situation is detected, an error code will be generated and if necessary, the set is put in protection mode. The protection mode is indicated by the blinking of the front LED at a frequency of 3 Hz (or by a coded blinking in special cases). In some error cases however, the microprocessor does not put the set in the protection mode (this is the case with the - hardware - loudspeaker protection of the audio amplifier).

The content of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via DST/ComPair.

To get a quick diagnosis, this chassis has three service-modes implemented:
- The **Customer Service Mode** (CSM).
- The **Service Default Mode** (SDM). Start-up of the set in a predefined way.
- The **Service Alignment Mode** (SAM). In this mode, items of the set can be adjusted via a menu.

You can enter both SDM and SAM modes via the "service pads" on the SSP, via an RC-transmitter (DST or standard RC), or via ComPair. It is not possible to enter the SAM in "standby"; the TV has to be in "normal operation" mode.

The "Protection Diagram" shows the structure of the protection system. See diagram below.

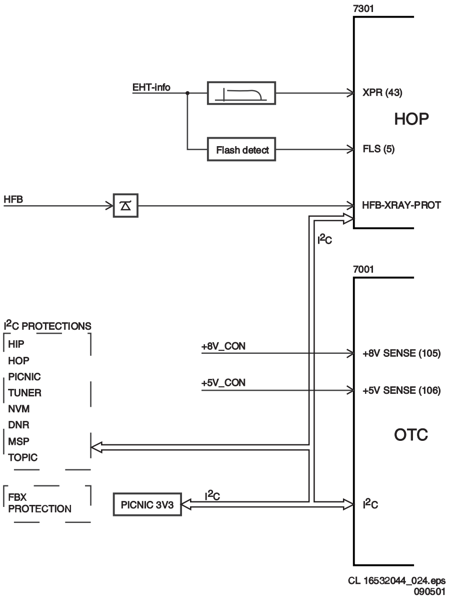


Figure 5-3 Protection diagram

There are several types of protections:

- I^2C related protections.
- OTC related protections (via polling on I/O pins or via algorithms).
- HOP related protections (mainly for deflection items).
- Hardware errors that are not sensed by the OTC (e.g. vertical flyback protection, bridge coil protection, E/W protection, arcing protection).

All protections are explained below.

5.7.2 I^2C Related Protections

In normal operation, some registers of the I^2C controlled ICs are refreshed every 200 ms. During this sequence, the I^2C busses and the I^2C ICs are checked.
An I^2C protection will take place if the SDA and SCL lines are short-circuited to ground, or to each other. An I^2C error will also occur, if the power supply of the IC is missing (e.g. FBX_PROT (error 16)).

5.7.3 OTC Related Protections

If a protection is detected at an OTC input, the OTC will start to scan all protection inputs every 200 ms for 5 times. If the protection on one of the inputs is still active after 1 s, the microprocessor will put the set in the protection mode. Before the scanning is started, a so-called "ESD refresh" is carried out. This is done, because the interrupt on one of the inputs is possibly caused either by a flash or by ESD. As a flash or ESD can influence IC settings, the HIP, MSP, 3D Comb (US only) and wireless module are initialised again, to ensure the normal picture and sound conditions of the set.

8 V and 5 V protections: The microprocessor senses the presence of the 8 V and 5 V (via the "+5V_CON" and "+8V_CON" lines). If one (or both) of these voltages is (are) not present, an error code is stored in the error buffer of the NVM, and the set is put in the protection mode.

5.7.4 HOP Related Protections

The OTC reads every 200 ms, the status register of the HOP (via the I^2C bus). If a protection signal is detected on one of the inputs of the HOP, the relevant error bit in the HOP register is set to "high". If this error bit is still "high" after 1 s, the OTC will store the error code in the error buffer of the NVM and, depending on the relevancy of the error bit, the set will either go into the protection mode or not.

The following protections are implemented:

- **HFB (Horizontal Flyback):** If the horizontal flyback is not present, this is detected via the HOP (HFB_X-RAY_PROT). One status bit is set to "high". The error code is stored in the error buffer and the set will go into the protection mode.
- **XPR (X-ray protection):** If the HFB pulses are too low (level detection), the HOP will detect this via the XPR-bit. The error will be logged in the error buffer and the set will go into protection mode.

Note: Both errors will be logged as HFB-failure.

5.7.5 Hardware Related Protections

Due to the architecture ("hot" deflection), some protections cannot be sensed by the microprocessor. Three of these protections will lead to a protection on set level (Standby mode and blinking LED), while another will only lead to a circuit protection.

TV-set Protection
The following fault conditions will lead to a "complete" set protection:

- **BRIDGECOIL protection:** This is sensed via the "EW" signal going to the base of TS7652 (via R3495 and D6499). In a normal situation, the voltage on C2498 (diagram A4) is high and TS7652 is conducting. When bridge coil 5422 (diagram A3) is short circuited, the voltage on C2498 changes to low, which will block TS7652. In this case, also TS7641 will block and the voltage on 2642 will rise until TS7443 is forced in conduction. The "SUP-ENABLE" signal (in normal operating condition -20 V) is shorted now to ground level, which will force the Main Power Supply to Standby mode.
- **ARC protection:** If there are "open" connections (e.g. bad solder joints) in the high-energy deflection circuitry, this can lead to damaging effects (read: fire). For that reason, the E/W current is sensed (via 3479//3480). If this current becomes too high, the "thyristor" circuit (TS7653 and TS7654) is triggered. TS7442 is switched "on" and TS7443 is forced into conduction. . The "SUP-ENABLE" signal is shorted now to ground level, which will force the Main Power Supply to Standby mode.
- **NON_VFB (No vertical Flyback) protection:** If the frame stage generates no pulses, TS7641 will block. TS7443 is now switched "on", which will lead to Standby mode. Therefore, in normal operation condition, TS7641 and TS7652 are conducting, while TS7443 is blocked.

Circuit Protection
The following fault condition will lead to a "partly" set protection:

- **PROT1 (DC) protection:** When a DC-voltage (positive or negative) is sensed on one of the loudspeaker outputs, the protection circuit (TS7704, 7705, 7706 and 7707 in diagram A6) will put the IC7700 in Standby mode (via tri-state input pin 6). For more details, see chapter "Circuit Descriptions".

5.8 Repair tips

5.8.1 Miscellaneous

The relay you hear when you switch the set "on" (from Standby or via the mains switch), is from the degaussing circuitry. It is not used for switching the Power Supply (as done in the MG-chassis).

Take care not to touch the "hot" heatsink while disconnecting the SSP, despite the fact that the mains cord is out of the mains socket. There can still be an annoying rest-voltage on the heatsink for a short while. Because the discharge resistors 3502 and 3503 (on the LSP between hot and cold part) are not stuffed for Europe. Instead, discharge resistors 3066 and 3057 on the Mains Switch panel are used, but because they are located before the Mains switch, they only discharge when this switch is "on".
Advice: when you want to disconnect the SSP, first disconnect the Mains cord, but keep the Mains Switch "on".

Where the circuitry was too "crowded" for service printing, you can find the correct location on the "test point overviews" in this manual.
A very large part of the LSP is "hot", such as:

- The primary part of the Standby Supply.
- The whole Main supply (except for the secondary Audio supply).
- And the complete deflection circuitry (so notice that the deflection coil is hot!).

5.8.2 Start-up Sequence

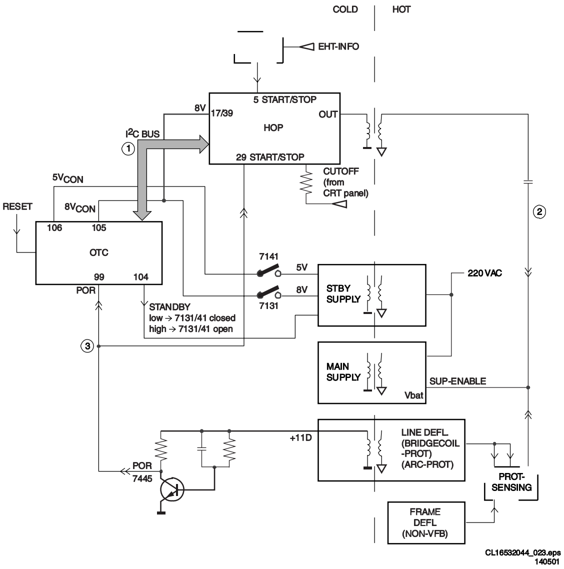


Figure 5-4 Start-up circuitry

The start up sequence differs from other sets (e.g. MG-sets or EM2E-sets, but is same as in EM3E-set):

1. When the set is switched “on”, the 5 and 8 V lines (“+5V_CON” and “+8V_CON”) of the standby power supply are activated.
2. After the OTC senses them, the µP will address the HOP via the I^2C-bus, to start the drive [1].
3. Via the “SUP-ENABLE” signal, the Main Supply is switched “on” and will deliver the V_BAT to the Line deflection stage [2].
4. EHT generation is now started.
5. The OTC will un-blank the picture.
6. When you switch “off” the set, this is done in a controlled way via the POR signal [3].

Note: Standby is not directly achieved via the Standby line of the microprocessor, but indirectly via the HOP circuitry.

5.8.3 ComPair

This chassis does not have an IR transmitting LED (as in MG-sets). Therefore, a “Service” (ComPair) connector is implemented at the rear side of the set, which is directly accessible (as in A10-, EM2E-, EM3E and EM5E-sets). In addition to this, there is also a blinking LED procedure to show the contents of the error buffer.

When you use ComPair, you have the possibility to activate a “stepwise start-up” mode. With this mode, you can initiate the start-up sequence step by step. This also means that in certain steps, some protections are not activated. This is sometimes very convenient during repair.

5.8.4 Protections

Activating SDM via the “service pads” will overrule the processor-controlled protections, but not the hardware protections. This means, that the A/D-input protections (5 and 8 V) and the I^2C “not-acknowledging” info of the feature box (FBX) and of the Tuner are overruled.
Caution: When doing this, the service technician must know what he is doing, as it could lead to damaging the set.

The “ARC”- and/or “BRIDGECOIL” protection are hardly ever triggered, however:

When you suspect the “ARC” protection, look for bad solder joints and smell. By interrupting resistor 3497, this protection is disabled (special attention needed!).
When you suspect the “BRIDGECOIL” protection, which can also be due to a too wide picture amplitude, shorten G and S of the E/W MOSFET 7480. This will disable the protection. You will now have minimal horizontal amplitude. Re-align the horizontal amplitude in the SAM menu and remove the G/S short of TS7480.

5.8.5 Main Supply

The simplest way is, to replace the components of the Main Supply with repair kit 3122 785 90550.

More detailed way:

1. Replace FET 7504 and zener 6505.
2. Disconnect the SSP panel.
3. Short B and E of TS7529, in order to put the Main Supply in “on”-mode (TS7529 is blocking then).
   Caution: To prevent that R3403 and TS7443 will be damaged, **first disable the HW-protection of the deflection circuit.** Therefore short circuit C2642 on the LSP (diagram A4).
4. Attach a load of 500 Ω to V_BAT capacitor C2515 (the supply can not work without a minimum load).
5. Use a variac, and slowly increase the V_MAINS. Measure over sensing resistors R3514//15, if a nice sawtooth voltage becomes available.
6. Also measure the V_BAT. This may never exceed +141 V. If it does, there is something wrong in the feedback circuitry (e.g. regulator 7506).

Note: Be careful when measuring on the gate of FET TS7504. This circuitry is very high ohmic and can easily be damaged (first connect ground to measuring equipment, than measure the gate).

5.8.6 Standby Supply

The simplest way is to replace the components of the Standby Supply with repair kit 3122 785 90530.

5.8.7 Line Deflection

The simplest way is to replace the components of the Line Deflection circuitry with repair kit: 3122 785 90330
Caution: item 3400 used in this chassis is different from the part supplied in the kit. See partlist for correct value and ordercode.

5.8.8 Frame Deflection

Caution: When the Frame Deflection circuitry is suspected, one must be careful. Because there is a DC-voltage on the frame deflection, **the beam current could damage the CRT neck, leading to a defective CRT**.

To prevent this from happening, you must:
Interrupt the resistors 3403 and 3404 on the CRT panel (diagram F1), in order to remove the “filament” voltage from the tube (no beam current, so no chance of destroying the CRT).
Interrupt resistor 3403 on the LSP (diagram A4) to disable the “SUP-ENABLE” line.
Measure with a multi-meter, or better with an oscilloscope, the functionality of the Frame stage.
After you have found the cause, exchange the defective component (e.g. TDA8177), and re-solder the interrupted resistors.

Table 5-4 Repair tips

Phenomenon	Possible Cause	Repair tip
No picture, no LED.	Standby Supply defective.	Measure circuitry (see diagram A2). Start at test-point A19.When the Mains switch is 'on', this voltage must always be available
No picture, LED blinking at 3 Hz.	Set is in protection due to various causes. For error codes see error-code list.	You have no picture, so: - Read the error buffer via ComPair (error buffer is accessible when set is in protection, compare-file will guide you to this) - Read the blinking LED information via standard remote command <mute>06250x<ok> - Or you read the error code sequence via standard remote command <mute>062500<ok>. When you have found the error, check the circuitry related to the supply voltage and I2C-communication or the circuitry that triggers the protection.
No picture, LED blinking with code 6-6-6 or 18-18-18.	No communication on slow I2C- or fast I2C-bus.	As processor cannot communicate with one of the 2 busses it the standby-led spontaneously starts blinking 6-6-6-etc or 18-18-18-etc... If in the error buffer somewhere is an error 6 or 18, these will have the highest priority starting the mentioned blinking. Measure dependent of the error on the I2C-bus which device is loading the bus. (Use I2C-overview)
No picture, LED blinking with code 1-1-1.	No communication on NVM-I2C bus to the uP.	As the uP cannot communicate with the NVM I2C bus, it spontaneously starts blinking 1-1-1. **Note:** when there is no access to the NVM, a lot of picture setting can go wrong.
No picture, no sound. Set is making audible squeaking sound	Supply is possibly in hiccup-mode, which is audible via a squeaking supply transformer.	Possible causes: 1- V_BAT is shorted (caused by short circuited line transistor 7421), or Sound winding is shorted (amplifier is shortening the power supply lines), or 2- D6514 is shorted (due to a too high V_BAT). Remove excessive load, to see what causes the failure, or check feedback circuit. See repair tip 'Main Power Supply' (supply needs a minimal load).
No picture, no sound. Blue LED works fine	Supply does not work correctly.	If e.g. V_BAT is only about 90 V, it is possible that the regulator IC (7506) is defective.
No RC-reception. Blue LED does not echo RC-commands.	uP circuitry or RC-receiver is defective.	In case the set does react on a local keyboard operation, you must check the RC-receiver circuitry (diagram E).
Relay (degaussing) is not audible, when set is switched from 'off' or 'standby' to 'on'.	uP is not working correctly.When pin 115 is low, the degaussing must be activated.	Check RESET-circuitry on diagram B5A. Check the level on pin 115 when you switch the set 'on'. Signal must be low initially and go to high after approx. 12 s.
Picture is rotated.	Rotation circuitry on diagram A5, or related supply to it, malfunctions.	Measure test points on diagram A5.
Picture is continuously switching 'off' and 'on', showing heavy 'switch' spots (set does not go into protection).	200 V is missing on CRT panel.	Probably a bad connection from LSP connector 1424 to CRT connector 1424 (diagram F1), or an interruption of the 200 V supplies line (e.g. R3341 on circuit F1 is interrupted).
Picture is not sharp.	Focus is possibly misaligned or SCAVEM-circuitry does not work correctly.	Re-align the 'FOCUS' potmeter on the Line Output Transformer, or check the SCAVEM circuitry on the CRT-panel (diagram F2). It is also possible that the DAF circuitry is defective (see diagram I). Check the V_dc values.
Picture is not synchronised.	The sync is derived in the HIP from xtal 1305 and/or 1308.	Maybe the crystals 1305 and/or 1308 are making a bad contact.
Picture is distorted.	Check video-path in Service Default Mode.	Investigate whether there is an error code present in the error buffer. In case there is one, check the I2C-bus and/or supply lines (see overview supply lines).Measure and check signal path Tuner-HIP-PICNIC-HOP-RGB amplifier.In case it is a geometry issue, check on diagram A4 opto-coupler 7482, OpAmps 7440/7450 and the Frame circuitry alignments or a possible corrupted NVM (7011) on diagram B5A.
Picture with horizontal stripes.	Pixel Plus processing is malfunctioning	Check functionality on circuitry (B3a, B3b, and B3c) of PICNIC (7713), FALCONIC (7718, EAGLE (7724) and/or field memories (7714, 7717, 7719, 7722 and 7723.Tip: the whole Pixel Plus chipset (3 ICs + 5 Field Memories) can be diagnosed via ComPair.
No menu, no OSD.	Probably a defective uP.	Measure test points B61to B64 on diagram B5A.
No NextView (EPG).	IC7012 defective or not powered.	Check circuitry around IC7012 on diagram B5A.
No Teletext.	IC7007 defective or not powered.	Check circuitry around IC7007 on diagram B5A. Check also B61to B64 around uP on diagram B5A.
Strange switch 'off' behaviour	TS7445 possibly defective.	Check, with a multi-meter, whether transistor TS7445 is well functioning. (diagram A3).

Phenomenon	Possible Cause	Repair tip
Problems caused by EPG (Electronic Program Guide). The TV set "hangs".	Problems with NexTView EPG broadcasts.	To switch from EPG 2C3 to Teletext guide. Press for 4 seconds, simultaneously the Menu button on the TV and digit 0 on the remote. The option settings for NexTView type and Flashram will not change.
NexTView EPG is not functioning only Teletext guide.	EPG version 2C3 is switched off during production.	To switch from Teletext guide to EPG 2C3. Press for 4 seconds, simultaneously the Menu button on the TV and digit 1 on the remote. The option settings for NexTView type and Flashram will not change.
Error codes of devices on slow I2C bus.	When there are errors on the slow bus it is possible that the TDL interface, DVD or radio module caused them.	When you clear the error buffer and do a functional test. Make sure you activate all modes available: TV, DVD and Radio in the user menu. By doing this all modules are activated and tested and possible error codes are logged. Another option is: You disconnect the flat cable (connector 1250) on the interface board TDL (T) to pinpoint where the problem is located on the slow bus.
Various symptoms, due to missing local supply voltage.	An interrupted fuse, NFR-resistor or connection.	When no symptom or error code leads you to a specific circuitry, use the supply lines overview (see supply lines overview), for a quick scan of all supply lines.

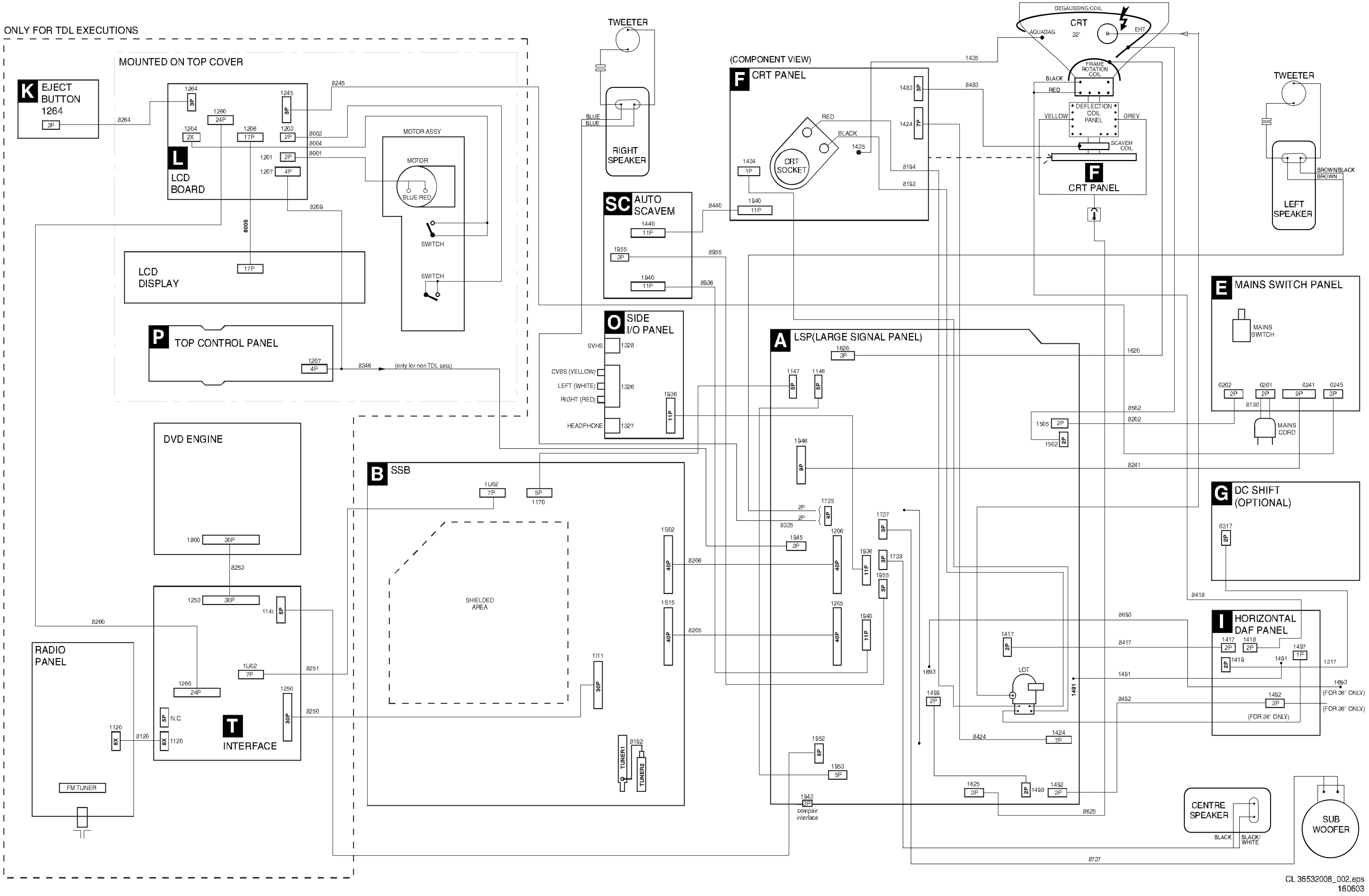
5.9 Software Downloading

In this chassis, you can upgrade the software via ComPair. You can find more information on how this procedure works in the ComPair file. It is possible that not all sets are equipped with the hardware, needed to make software upgrading possible. To speed up the programming process the firmware of the ComPair interface can be upgraded. See paragraph “How To Order” for the order number

Personal Notes:

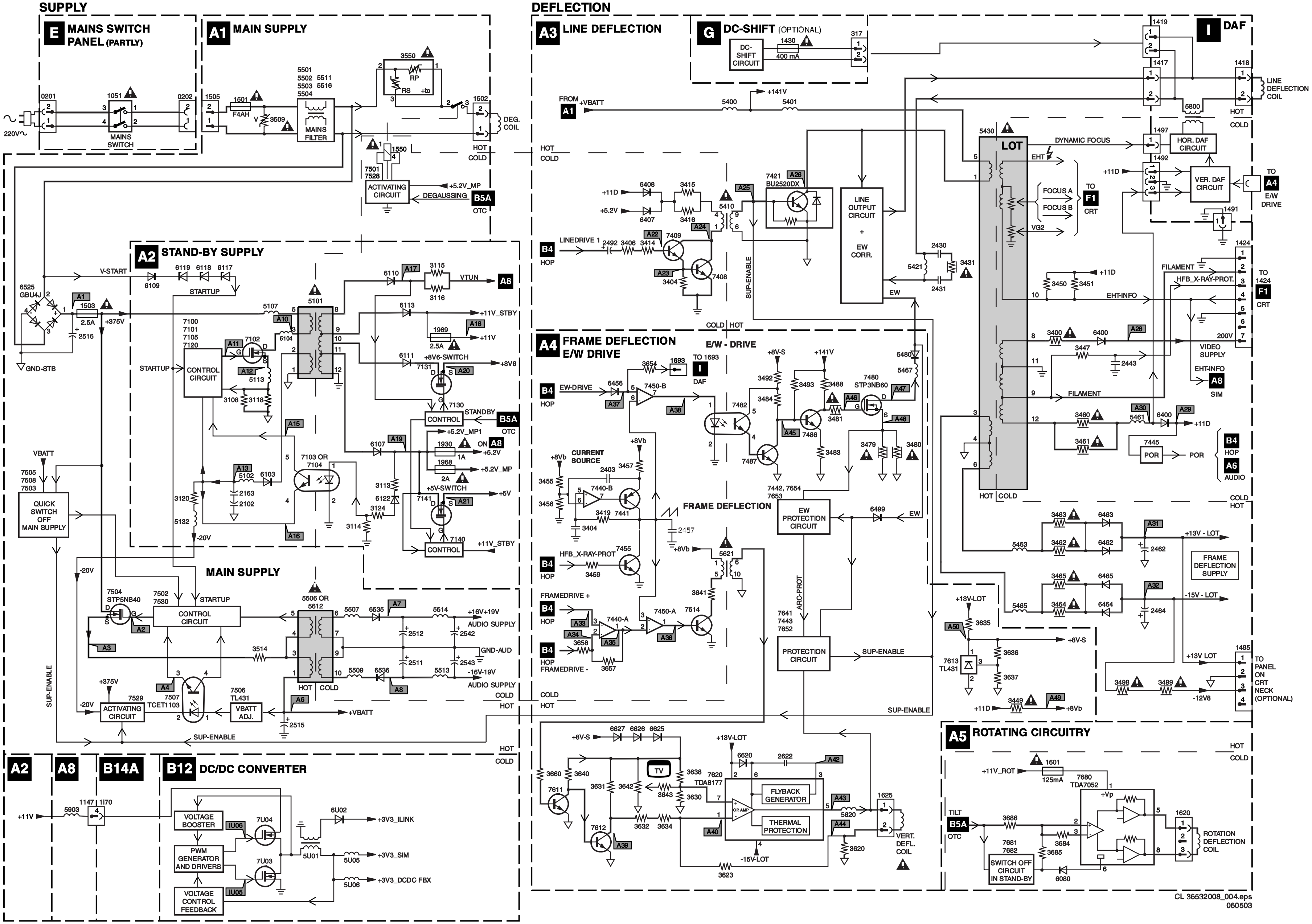
6. Wiring Diagram, Block Diagrams and Overviews

Wiring Diagram


ONLY FOR TDL EXECUTIONS
MOUNTED ON TOP COVER
K EJECT BUTTON 1264
3P
8264
1264 3P
1260 24P
1245 3P
8245
1204 2X
1206 17P
1203 2P
8002
8004
8001
1201 2P
1207 4P
L LCD BOARD
8209
8005
MOTOR ASSY
MOTOR
BLUE RED
SWITCH
SWITCH
LCD DISPLAY
17P
P TOP CONTROL PANEL
1207 4P
8346
(only for non TDL sets)
DVD ENGINE
1800 30P
8253
1253 30P
1141 5P
8260
1U02 7P
8251
1260 24P
1250 30P
8250
5P N.C.
8X 1120
T INTERFACE
RADIO PANEL
1120 8X
8120
FM TUNER
TWEETER
BLUE
BLUE
RIGHT SPEAKER
SC AUTO SCAVEM
1440 11P
1955 3P
1940 11P
8440
8955
8936
O SIDE I/O PANEL
SVHS 1328
CVBS (YELLOW)
LEFT (WHITE)
RIGHT (RED)
1326
HEADPHONE 1327
1936 11P
B SSB
1U02 7P
5P 1170
SHIELDED AREA
1S02 40P
8206
1S15 40P
8205
1I11 30P
TUNER1
8192
TUNER2
(COMPONENT VIEW)
F CRT PANEL
1483 3P
8483
1424 7P
RED
BLACK
1435
CRT SOCKET
1434 1P
1940 11P
8194
8193
1435
DEGAUSSING COIL
CRT
AQUADAG
32'
EHT
FRAME ROTATION COIL
BLACK
RED
YELLOW
DEFLECTION COIL PANEL
GREY
SCAVEM COIL
F CRT PANEL
TWEETER
BROWN/BLACK
BROWN
LEFT SPEAKER
E MAINS SWITCH PANEL
MAINS SWITCH
0202 2P
0201 2P
0241 9P
0245 3P
8190
MAINS CORD
A LSP(LARGE SIGNAL PANEL)
1620 3P
1620
1147 5P
1146 5P
8502
8202
1505 2P
1502 2P
1946 9P
8241
1735 4P
2P
2P
8335
1945 3P
1737 3P
1206 40P
1936 11P
1738 3P
1955 3P
1205 40P
1940 11P
G DC SHIFT (OPTIONAL)
0317 2P
8418
8693
1417 2P
8417
LOT
1491
1693
1499 2P
8492
1491
8424
1424 7P
I HORIZONTAL DAF PANEL
1417 2P
1418 2P
1497 1P
1419 2P
1491
1317
1693 (FOR 36" ONLY)
1492 3P
(FOR 36" ONLY)
(FOR 36" ONLY)
1952 5P
1953 5P
1943 3P compair interface
1625 3P
2P 1498
1492 3P
8625
8737
CENTRE SPEAKER
BLACK
BLACK/ WHITE
SUB WOOFER

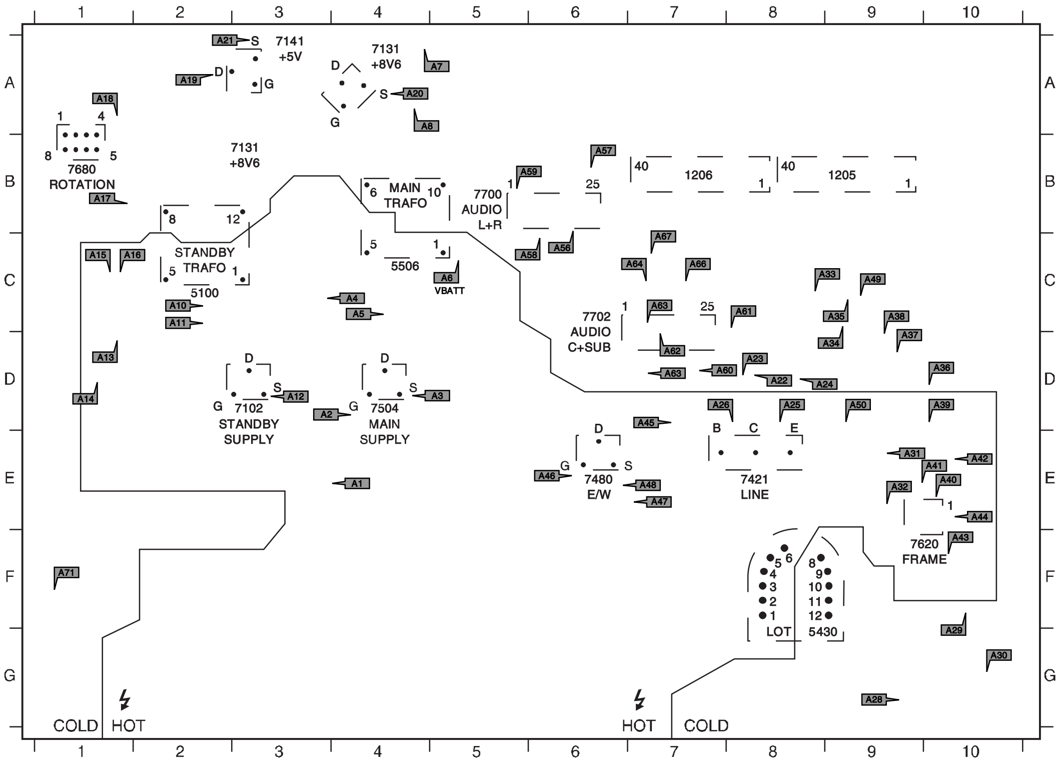
CL 36532008_002.eps
160603

Block Diagram Supply and Deflection

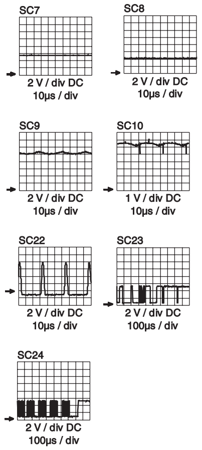

SUPPLY
E MAINS SWITCH PANEL (PARTLY)
220V~
0201
1051
MAINS SWITCH
0202
A1 MAIN SUPPLY
1505
1501
F4AH
3509
5501 5502 5503 5504
5511 5516
MAINS FILTER
3550
RP
RS
+to
1502
DEG. COIL
1550
7501 7528
ACTIVATING CIRCUIT
+5.2V_MP
DEGAUSSING
B5A
OTC
HOT
COLD
A2 STAND-BY SUPPLY
V-START
6109
6119 6118 6117
STARTUP
6525 GBU4J
1503
2.5A
+375V
2516
GND-STB
7100 7101 7105 7120
CONTROL CIRCUIT
7102
5113
3108
3118
5104
5107
5101
6110
3115
3116
VTUN
A8
6113
+11V_STBY
1969
2.5A
+11V
6111
7131
+8V6-SWITCH
+8V6
7130
CONTROL
STANDBY
B5A
OTC
6107
1930
1A
ON A8
+5.2V_MP1
+5.2V
1968
2A
+5.2V_MP
+5V-SWITCH
7141
+5V
7140
CONTROL
+11V_STBY
7103 OR 7104
5102
6103
2163
2102
3120
5132
-20V
3113
6122
3124
3114
VBATT
7505 7508 7503
QUICK SWITCH OFF MAIN SUPPLY
MAIN SUPPLY
-20V
7504 STP5NB40
7502 7530
STARTUP
CONTROL CIRCUIT
5506 OR 5612
5507
6535
5514
+16V+19V AUDIO SUPPLY
2512
2542
GND-AUD
3514
2511
2543
5509
6536
5513
-16V-19V AUDIO SUPPLY
HOT COLD
+375V
7529
ACTIVATING CIRCUIT
7507 TCET1103
7506 TL431
VBATT ADJ.
+VBATT
2515
SUP-ENABLE
A2
A8
B14A
B12 DC/DC CONVERTER
+11V
5903
1147
1170
VOLTAGE BOOSTER
PWM GENERATOR AND DRIVERS
VOLTAGE CONTROL FEEDBACK
IU06
IU05
7U04
7U03
6U02
+3V3_ILINK
5U01
5U05
+3V3_SIM
5U06
+3V3_DCDC FBX
DEFLECTION
A3 LINE DEFLECTION
FROM A1 +VBATT
5400
+141V
5401
G DC-SHIFT (OPTIONAL)
DC-SHIFT CIRCUIT
1430
400 mA
317
+11D
+5V
6408
6407
3415
3416
5410
A25
7421 BU2520DX
LINE OUTPUT CIRCUIT + EW CORR.
B4 HOP
LINEDRIVE 1
2492 3406 3414
7409
7408
3404
SUP-ENABLE
EW
2430
5421
2431
3431
COLD HOT
A4 FRAME DEFLECTION E/W DRIVE
E/W - DRIVE
3654
1693
TO 1693
I DAF
EW-DRIVE
6456
7450-B
+8Vb
CURRENT SOURCE
2403
3457
3455
3456
7440-B
3419
7441
3404
FRAME DEFLECTION
2457
HFB_X-RAY-PROT
7455
3459
FRAMEDRIVE +
FRAMEDRIVE -
7440-A
3658
3657
7450-A
7614
5621
3641
+8V-S
+141V
3492
3493
3488
7480 STP3NB60
3484
7482
7486
3481
3483
7487
3479
3480
7442, 7654 7653
EW PROTECTION CIRCUIT
6499
ARC-PROT
7641 7443 7652
PROTECTION CIRCUIT
SUP-ENABLE
6480
5467
+8V-S
6627 6626 6625
+13V-LOT
6620
2622
3660
3640
7611
3631
3642
TV
3643
3638
3630
7620 TDA8177
FLYBACK GENERATOR
THERMAL PROTECTION
7612
3632
3634
5620
1625
VERT. DEFL. COIL
3620
-15V-LOT
3623
5430
LOT
DYNAMIC FOCUS
EHT
FOCUS A
FOCUS B
VG2
TO F1 CRT
+11D
3450
3451
EHT-INFO
3400
6400
3447
2443
VIDEO SUPPLY
EHT-INFO
A8 SIM
FILAMENT
3460
5461
6400
+11D
3461
7445
POR
B4 HOP
A6 AUDIO
HOT COLD
3463
6463
3462
6462
5463
2462
+13V - LOT
FRAME DEFLECTION SUPPLY
3465
6465
3464
6464
5465
2464
-15V - LOT
+13V-LOT
3635
3636
7613 TL431
3637
+11D
3449
+8Vb
+13V LOT
3498
3499
-12V8
1495
TO PANEL ON CRT NECK (OPTIONAL)
I DAF
1419
1417
1418
LINE DEFLECTION COIL
5800
1497
HOR. DAF CIRCUIT
1492
VER. DAF CIRCUIT
TO A4 E/W DRIVE
1491
1424
FILAMENT
HFB_X-RAY-PROT.
TO 1424 F1 CRT
200V
A5 ROTATING CIRCUITRY
1601
+11V_ROT
125mA
7680 TDA7052
+Vp
TILT B5A OTC
3686
7681 7682
3684
3685
SWITCH OFF CIRCUIT IN STAND-BY
6080
1620
ROTATION DEFLECTION COIL
CL 36532008_004.eps
060503

Testpoint Overview LSP, Auto SCAVEM, and CRT

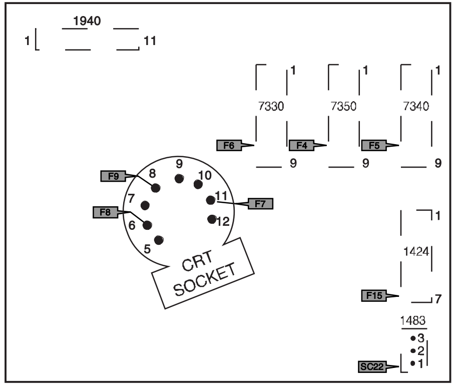
LSP COPPER TRACK SIDE


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
A21
S
7141
+5V
A19
D
G
7131
+8V6
D
S
A20
G
A7
A8
A18
1
4
8
5
7680
ROTATION
A17
7131
+8V6
6
MAIN
TRAFO
10
7700
AUDIO
L+R
1
A59
25
A57
40
1206
1
40
1205
1
8
12
STANDBY
TRAFO
5
1
5100
A15
A16
A10
A11
5
1
5506
A6
VBATT
A58
A56
A67
A64
A66
A4
A5
7702
AUDIO
C+SUB
1
A63
25
A61
A33
A49
A35
A38
A34
A37
A62
A63
A60
A23
A22
A24
A36
A13
A14
D
S
A12
G
7102
STANDBY
SUPPLY
A2
D
S
A3
G
7504
MAIN
SUPPLY
A26
A25
A50
A39
A45
B
C
E
7421
LINE
D
G
S
7480
E/W
A46
A48
A47
A1
A31
A42
A41
A40
A32
1
A44
7620
FRAME
A43
A71
6
5
4
3
2
1
LOT
8
9
10
11
12
5430
A29
A30
A28
COLD
HOT
HOT
COLD

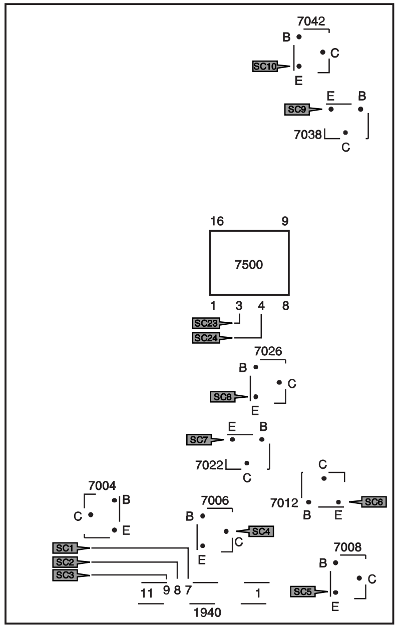
A1	E4
A3	D4
A4	C4
A5	C4
A6	C5
A7	A4
A8	B4
A10	C2
A11	C2
A12	D3
A13	D1
A14	D1
A15	C1
A16	C1
A17	B1
A18	A1
A19	A3
A20	A2
A21	A3
A22	D8
A23	D8
A24	D8
A25	D8
A26	D7
A28	G9
A29	G10
A30	G10
A31	E9
A32	E9
A33	C8
A34	D9
A35	C9
A36	D10
A37	D9
A38	C9
A39	D10
A40	E10
A41	E10
A42	E10
A43	F10
A44	E10
A45	D7
A46	E6
A47	E7
A48	E7
A49	C9
A50	D9
A56	C6
A57	B6
A58	C6
A59	B5
A60	D7
A61	C8
A62	D7
A63	D7
A64	C7
A66	C7
A67	C7
A71	F1

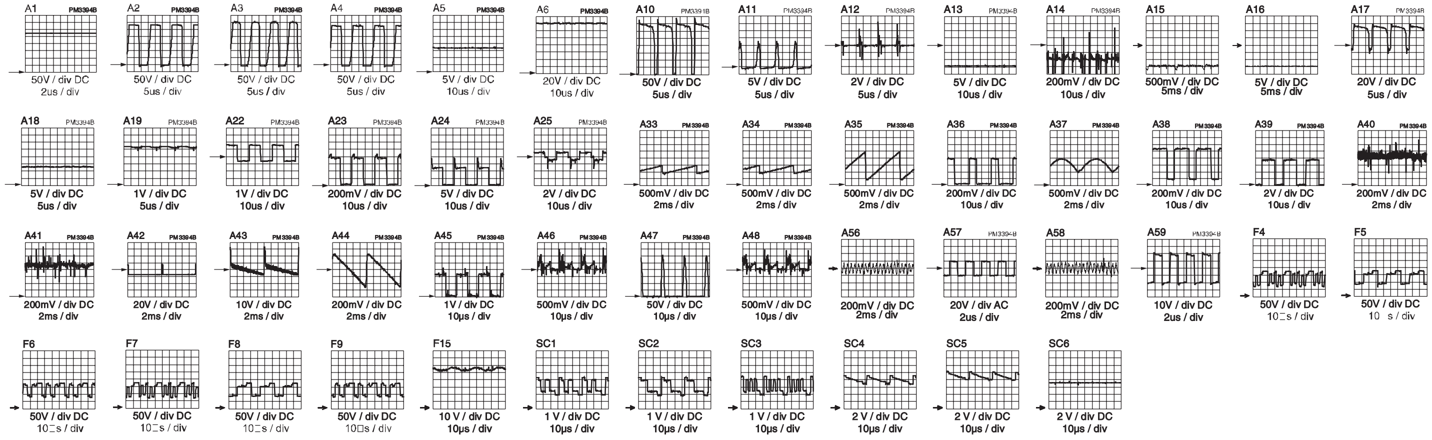


CRT PANEL (COPPER TRACK SIDE)


1940
1
11
1
1
1
7330
7350
7340
F6
F4
F5
9
9
9
F9
8
9
10
7
11
F7
F8
6
12
5
CRT
SOCKET
1
1424
F15
7
1483
3
2
1
SC22

AUTO SCAVEM PANEL
(COPPER TRACK SIDE)


7042
B
C
SC10
E
E
B
SC9
7038
C
16
9
7500
1
3
4
8
SC23
SC24
7026
B
C
SC8
E
E
B
SC7
7022
C
C
7004
B
C
E
7006
B
SC4
C
E
7012
B
E
SC6
SC1
SC2
SC3
11
9
8
7
1
1940
7008
B
C
SC5
E



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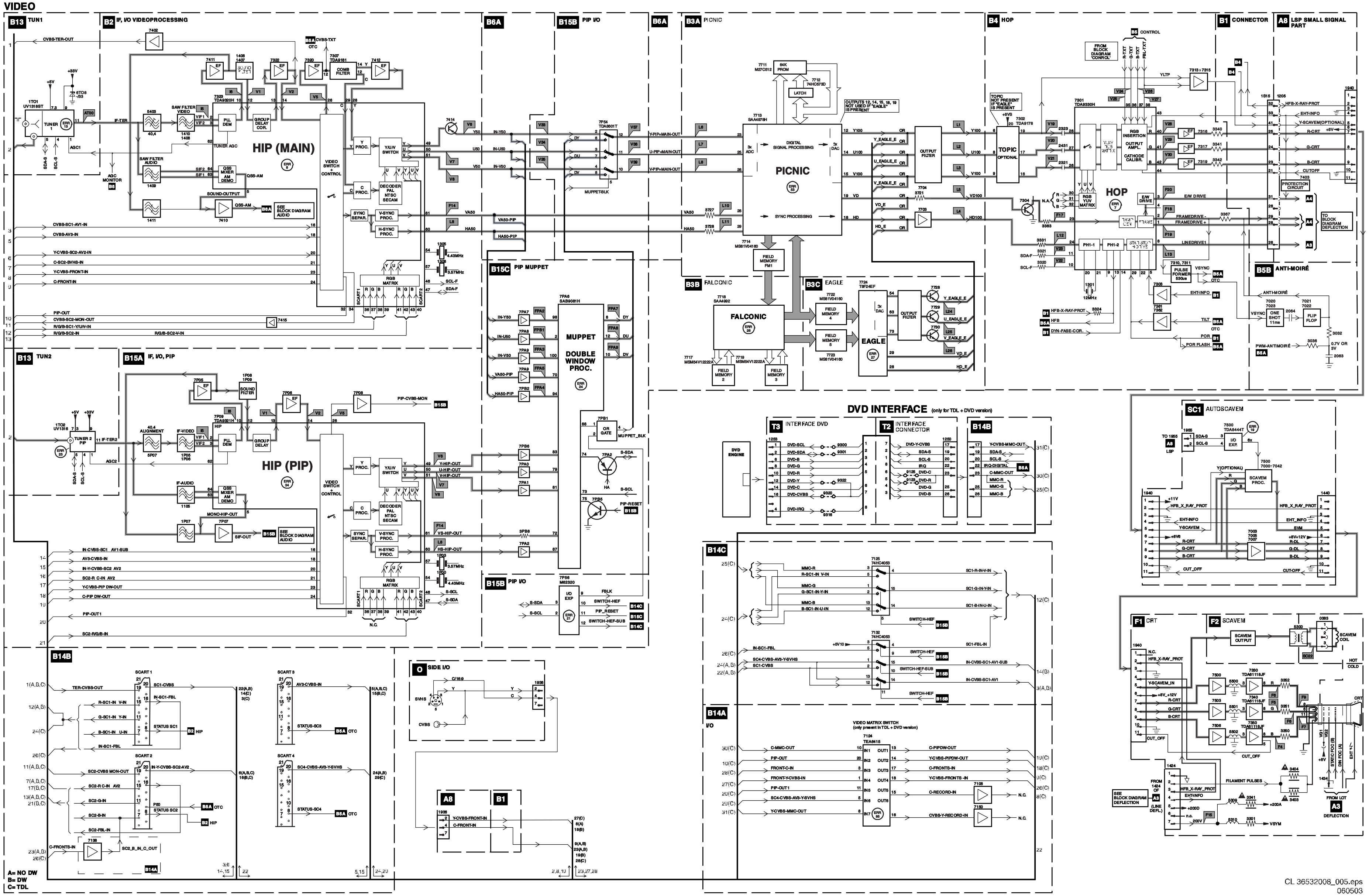
Block Diagram Video


VIDEO
B13 TUN1
B2 IF, I/O VIDEOPROCESSING
B6A
B15B PIP I/O
B3A PICNIC
B4 HOP
B1 CONNECTOR
A8 LSP SMALL SIGNAL PART
TUNER
HIP (MAIN)
VIDEO SWITCH + CONTROL
PICNIC
TOPIC
HOP
B3B FALCONIC
FALCONIC
B3C EAGLE
EAGLE
B15C PIP MUPPET
MUPPET DOUBLE WINDOW PROC.
B5B ANTI-MOIRÉ
B13 TUN2
B15A IF, I/O, PIP
HIP (PIP)
DVD INTERFACE (only for TDL + DVD version)
T3 INTERFACE DVD
T2 INTERFACE CONNECTOR
B14B
DVD ENGINE
SC1 AUTOSCAVEM
B14C
B14A I/O
VIDEO MATRIX SWITCH (only present in TDL + DVD version)
F1 CRT
F2 SCAVEM
B14B
SCART 1
SCART 2
SCART 3
SCART 4
O SIDE I/O
A8
B1
A= NO DW
B= DW
C= TDL

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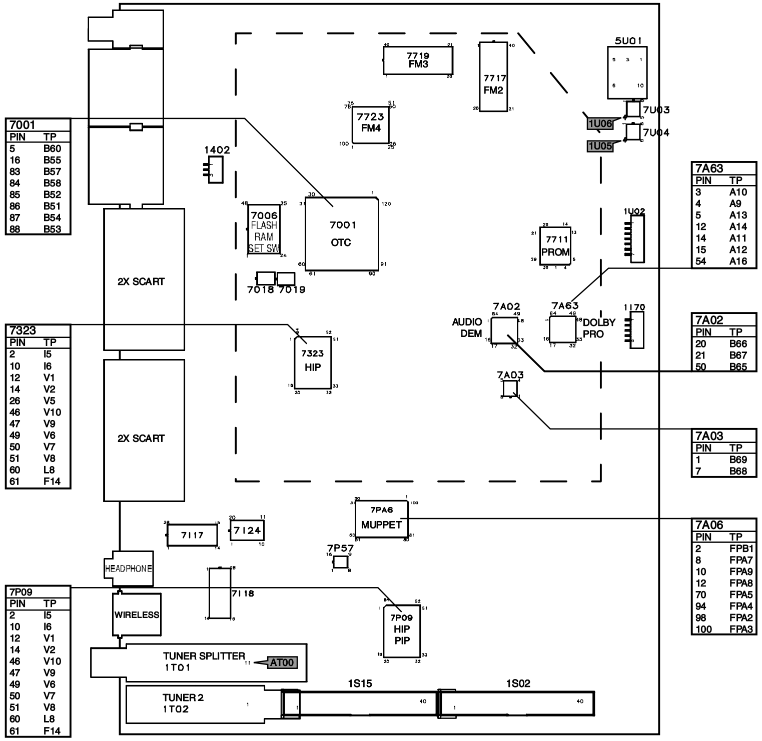
Testpoint Overview Small Signal Board

SSB side A


7719
FM3
7717
FM2
5U01
7U03
7U04
1U06
1U05
7723
FM4
1402
7006
FLASH
RAM
SET SW
7001
OTC
7711
PROM
1U02
1170
7018
7019
2X SCART
2X SCART
7323
HIP
AUDIO
DEM
7A02
7A63
DOLBY
PRO
7A03
7PA6
MUPPET
7117
7124
7P57
HEADPHONE
WIRELESS
7118
7P09
HIP
PIP
TUNER SPLITTER
1T01
AT00
TUNER 2
1T02
1S15
1S02

7001	
PIN	TP
5	B60
16	B55
83	B57
84	B58
85	B52
86	B51
87	B54
88	B53

7323	
PIN	TP
2	I5
10	I6
12	V1
14	V2
26	V5
46	V10
47	V9
49	V6
50	V7
51	V8
60	L8
61	F14

7P09	
PIN	TP
2	I5
10	I6
12	V1
14	V2
46	V10
47	V9
49	V6
50	V7
51	V8
60	L8
61	F14

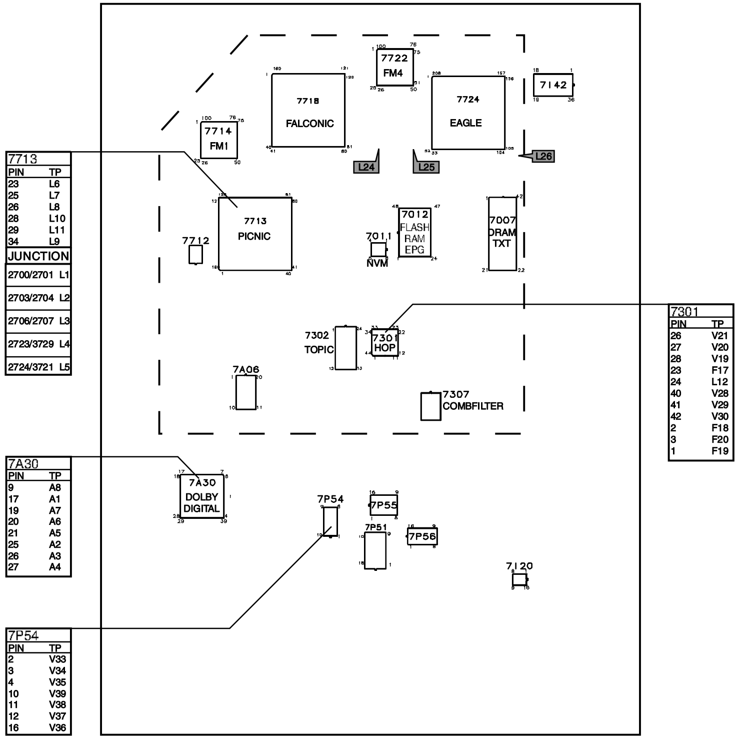
7A63	
PIN	TP
3	A10
4	A9
5	A13
12	A14
14	A11
15	A12
54	A16

7A02	
PIN	TP
20	B66
21	B67
50	B65

7A03	
PIN	TP
1	B69
7	B68

7A06	
PIN	TP
2	FPB1
8	FPA7
10	FPA9
12	FPA8
70	FPA5
94	FPA4
98	FPA2
100	FPA3

SSB side B


7722
FM4
7718
FALCONIC
7724
EAGLE
7142
7714
FM1
L24
L25
L26
7713
PICNIC
7712
7011
NVM
7012
FLASH
RAM
EPG
7007
DRAM
TXT
7302
TOPIC
7301
HOP
7A06
7307
COMBFILTER
7A30
DOLBY
DIGITAL
7P54
7P55
7P51
7P56
7120

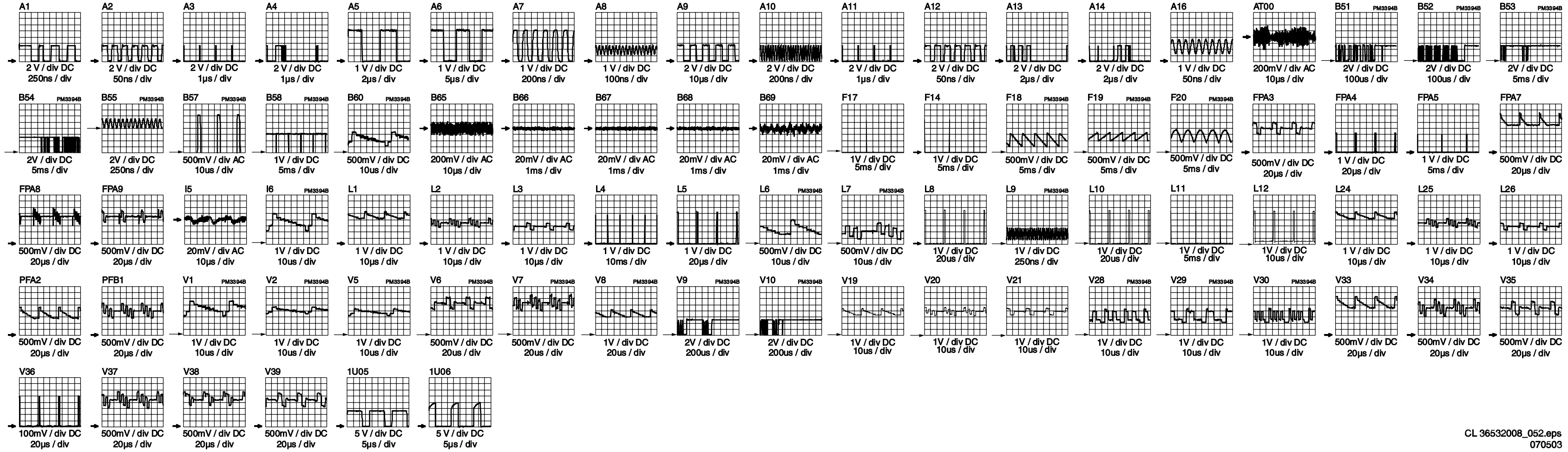
7713	
PIN	TP
23	L6
25	L7
26	L8
28	L10
29	L11
34	L9

JUNCTION	
2700/2701	L1
2703/2704	L2
2706/2707	L3
2723/3729	L4
2724/3721	L5

7A30	
PIN	TP
9	A8
17	A1
19	A7
20	A6
21	A5
25	A2
26	A3
27	A4

7P54	
PIN	TP
2	V33
3	V34
4	V35
10	V39
11	V38
12	V37
16	V36

7301	
PIN	TP
26	V21
27	V20
28	V19
23	F17
24	L12
40	V28
41	V29
42	V30
2	F18
3	F20
1	F19



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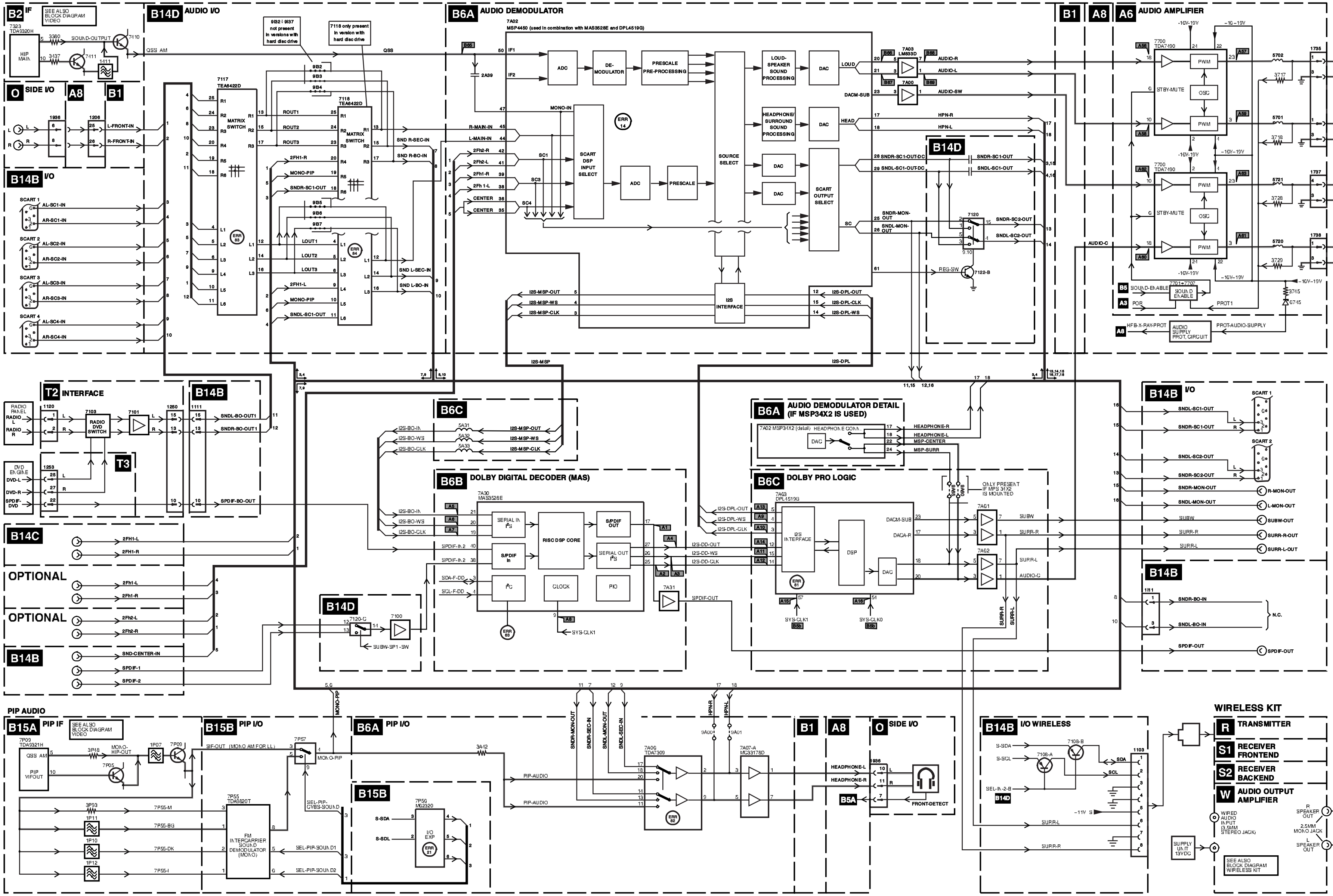
Block Diagram Audio


B2 IF
SEE ALSO BLOCK DIAGRAM VIDEO
7323 TDA9320H
HIP MAIN
SOUND-OUTPUT
QSS AM
O SIDE I/O
A8
B1
L-FRONT-IN
R-FRONT-IN
B14B I/O
SCART 1
AL-SC1-IN
AR-SC1-IN
SCART 2
AL-SC2-IN
AR-SC2-IN
SCART 3
AL-SC3-IN
AR-SC3-IN
SCART 4
AL-SC4-IN
AR-SC4-IN
B14D AUDIO I/O
9132 / 9137 not present in versions with hard disc drive
7118 only present in version with hard disc drive
7117 TEA6422D
7118 TEA6422D
MATRIX SWITCH
ROUT1
ROUT2
ROUT3
2FH1-R
MONO-PIP
SNDR-SC1-OUT
LOUT1
LOUT2
LOUT3
2FH1-L
SNDL-SC1-OUT
SND R-SEC-IN
SND R-BO-IN
SND L-SEC-IN
SND L-BO-IN
B6A AUDIO DEMODULATOR
7A02 MSP4450 (used in combination with MAS3528E and DPL4519G)
IF1
IF2
ADC
DE-MODULATOR
PRESCALE PRE-PROCESSING
SOURCE SELECT
LOUD-SPEAKER SOUND PROCESSING
HEADPHONE/ SURROUND SOUND PROCESSING
DAC
SCART DSP INPUT SELECT
PRESCALE
SCART OUTPUT SELECT
I2S INTERFACE
MONO-IN
R-MAIN-IN
L-MAIN-IN
2Fh2-R
2Fh2-L
2Fh1-R
2Fh1-L
CENTER
CENTER
I2S-MSP-OUT
I2S-MSP-WS
I2S-MSP-CLK
I2S-DPL-OUT
I2S-DPL-CLK
I2S-DPL-WS
LOUD
DACM-SUB
HEAD
SNDR-SC1-OUT-DC
SNDL-SC1-OUT-DC
SNDR-MON-OUT
SNDL-MON-OUT
7A03 LM833D
7A00
AUDIO-R
AUDIO-L
AUDIO-SW
HPN-R
HPN-L
B14D
SNDR-SC1-OUT
SNDL-SC1-OUT
7120
SNDR-SC2-OUT
SNDL-SC2-OUT
REG-SW
7122-B
B1 A8 A6 AUDIO AMPLIFIER
7700 TDA7490
STBY-MUTE
PWM
OSC
AUDIO-C
15W/ 8Ω
SUBWOOFER
CENTRE
SOUND-ENABLE
POR
7701÷7702 SOUND ENABLE
PROT1
HFB-X-RAY-PROT
PROT-AUDIO-SUPPLY
AUDIO SUPPLY PROT. CIRCUIT
I2S-MSP
I2S-DPL
T2 INTERFACE
RADIO PANEL
RADIO L
RADIO R
7103 RADIO DVD SWITCH
7101
DVD ENGINE
DVD-L
DVD-R
SPDIF-DVD
T3
B14B
SNDL-BO-OUT1
SNDR-BO-OUT1
SPDIF-BO-OUT
B6C
I2S-BO-IN
I2S-BO-WS
I2S-BO-CLK
B6B DOLBY DIGITAL DECODER (MAS)
7A30 MAS3528E
SERIAL IN I2S
S/PDIF IN
RISC DSP CORE
S/PDIF OUT
SERIAL OUT I2S
I2C
CLOCK
PIO
SPDIF-IN-1
SPDIF-IN-2
SDA-F-DD
SCL-F-DD
SYS-CLK1
7A31
SPDIF-OUT
B6A AUDIO DEMODULATOR DETAIL (IF MSP34X2 IS USED)
7A02 MSP34X2 (detail)
HEADPHONE-R
HEADPHONE-L
MSP-CENTER
MSP-SURR
B6C DOLBY PRO LOGIC
7A63 DPL4519G
I2S INTERFACE
DSP
I2S-DD-OUT
I2S-DD-WS
I2S-DD-CLK
DACM-SUB
DACA-R
SYS-CLK1
SYS-CLK0
ONLY PRESENT IF MPS 34X2 IS MOUNTED
7AG1
7AG2
SUBW
SURR-R
SURR-L
B14B I/O
SNDL-SC1-OUT
SNDR-SC1-OUT
SNDL-SC2-OUT
SNDR-SC2-OUT
SNDR-MON-OUT
SNDL-MON-OUT
R-MON-OUT
L-MON-OUT
SUBW-OUT
SURR-R-OUT
SURR-L-OUT
B14B
SNDR-BO-IN
SNDL-BO-IN
N.C.
SPDIF-OUT
B14C
2FH1-L
2FH1-R
OPTIONAL
2Fh2-L
2Fh2-R
B14B
SND-CENTER-IN
SPDIF-1
SPDIF-2
B14D
7120-C
7100
SUBW-SP1-SW
PIP AUDIO
B15A PIP IF
7P09 TDA9321H
PIP VIFOUT
MONO-HIP-OUT
B15B PIP I/O
7P55 TDA9820T
FM INTERCARRIER SOUND DEMODULATOR (MONO)
SIF-OUT (MONO AM FOR LL)
7P57
MONO-PIP
SEL-PIP-CVBS-SOUND
SEL-PIP-SOUND1
SEL-PIP-SOUND2
B15B
7P56 MC2320
I/O EXP
S-SDA
S-SDL
B6A PIP I/O
PIP-AUDIO
7A06 TDA7309
7A07-A MC33178D
SNDR-MON-OUT
SNDR-SEC-IN
SNDL-MON-OUT
SNDL-SEC-IN
HPN-R
HPN-L
B1
A8
O SIDE I/O
HEADPHONE-L
HEADPHONE-R
FRONT-DETECT
B5A
B14B I/O WIRELESS
7108-B
7106-A
SDA
SCL
SEL-IN-2-B
B14D
SURR-L
SURR-R
WIRELESS KIT
R TRANSMITTER
S1 RECEIVER FRONTEND
S2 RECEIVER BACKEND
W AUDIO OUTPUT AMPLIFIER
WIRED AUDIO INPUT (3.5MM STEREO JACK)
R SPEAKER OUT
2.5MM MONO JACK
L SPEAKER OUT
SUPPLY UNIT 13VDC
SEE ALSO BLOCK DIAGRAM WIRELESS KIT

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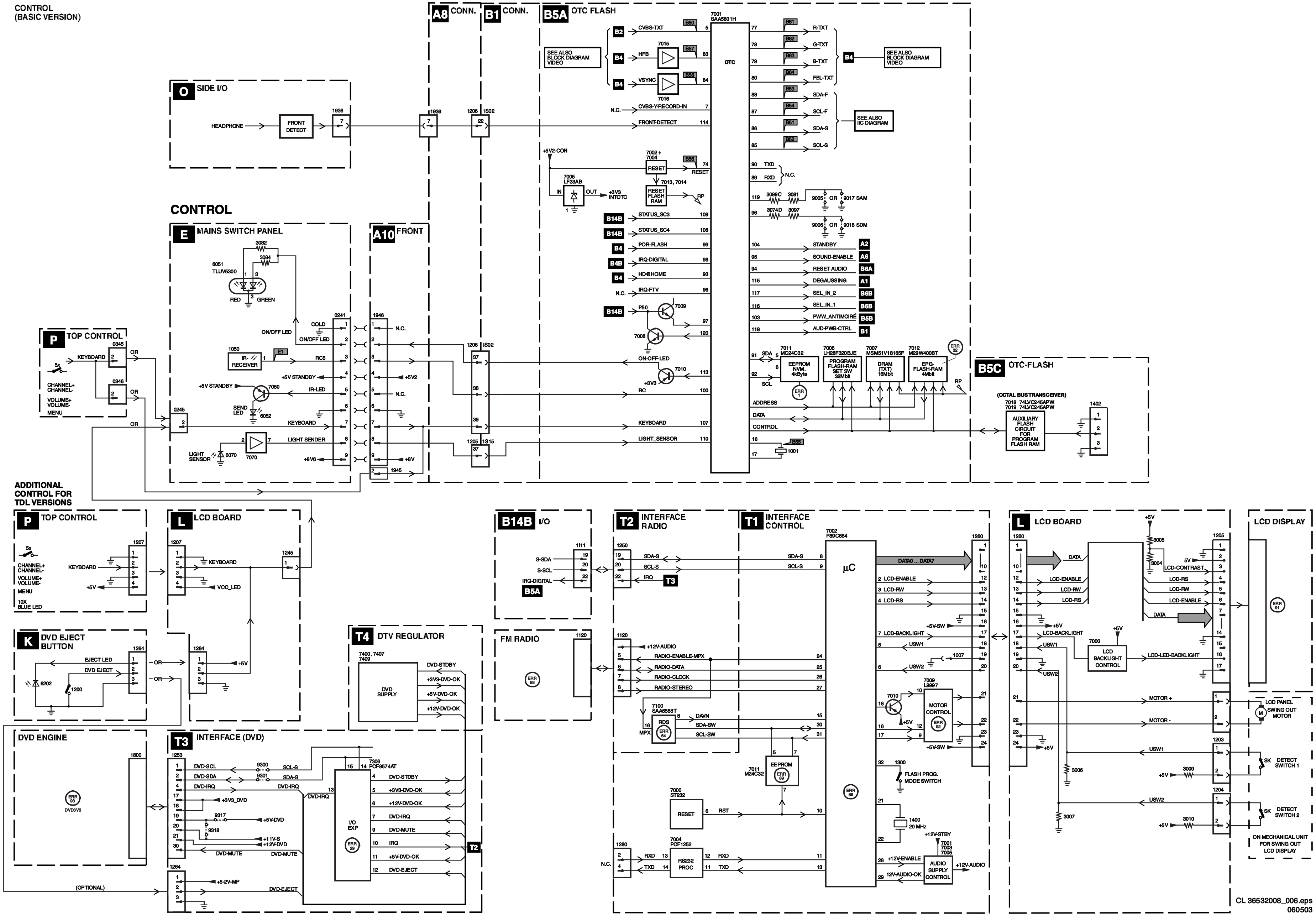
060503

Block Diagram Controls


CONTROL
(BASIC VERSION)
A8 CONN.
B1 CONN.
B5A OTC FLASH
7001 SAA5801H
OTC
SEE ALSO BLOCK DIAGRAM VIDEO
SEE ALSO IIC DIAGRAM
O SIDE I/O
HEADPHONE
FRONT DETECT
FRONT-DETECT
CVBS-TXT
HFB
VSYNC
CVBS-Y-RECORD-IN
R-TXT
G-TXT
B-TXT
FBL-TXT
SDA-F
SCL-F
SDA-S
SCL-S
TXD
RXD
N.C.
+5V2-CON
7005 LF33AB
+3V3 INTOTC
RESET
RESET FLASH RAM
9017 SAM
9018 SDM
STATUS_SC3
STATUS_SC4
POR-FLASH
IRQ-DIGITAL
HD@HOME
IRQ-FTV
STANDBY
SOUND-ENABLE
RESET AUDIO
DEGAUSSING
SEL_IN_2
SEL_IN_1
PWW_ANTIMOIRE
AUD-PWB-CTRL
ON-OFF-LED
RC
KEYBOARD
LIGHT_SENSOR
7011 MC24C32 EEPROM NVM. 4kByte
7006 LH28F320BJE PROGRAM FLASH-RAM SET SW 32Mbit
7007 MSM51V18165F DRAM (TXT) 16Mbit
7012 M29W400BT EPG-FLASH-RAM 4Mbit
ADDRESS
DATA
CONTROL
B5C OTC-FLASH
(OCTAL BUS TRANSCEIVER)
7018 74LVC245APW
7019 74LVC245APW
AUXILIARY FLASH CIRCUIT FOR PROGRAM FLASH RAM
CONTROL
E MAINS SWITCH PANEL
6051 TLUV5300
RED
GREEN
COLD
ON/OFF LED
IR-RECEIVER
RC5
+5V STANDBY
IR-LED
SEND LED
LIGHT SENDER
LIGHT SENSOR
+8V6
A10 FRONT
+5V2
+8V
P TOP CONTROL
KEYBOARD
CHANNEL+
CHANNEL-
VOLUME+
VOLUME-
MENU
OR
ADDITIONAL CONTROL FOR TDL VERSIONS
P TOP CONTROL
10X BLUE LED
L LCD BOARD
VCC_LED
K DVD EJECT BUTTON
EJECT LED
DVD EJECT
DVD ENGINE
DVD3V3
T3 INTERFACE (DVD)
DVD-SCL
DVD-SDA
DVD-IRQ
+3V3_DVD
+5V-DVD
+11V-S
+12V-DVD
DVD-MUTE
+5-2V-MP
DVD-EJECT
(OPTIONAL)
7306 PCF8574AT
I/O EXP
DVD-STDBY
+3V3-DVD-OK
+12V-DVD-OK
DVD-IRQ
IRQ
+5V-DVD-OK
T4 DTV REGULATOR
7400, 7407 7409
DVD SUPPLY
+5V-DVD-OK
+12V-DVD-OK
B14B I/O
S-SDA
S-SCL
IRQ-DIGITAL
FM RADIO
T2 INTERFACE RADIO
+12V-AUDIO
RADIO-ENABLE-MPX
RADIO-DATA
RADIO-CLOCK
RADIO-STEREO
7100 SAA6588T
RDS
MPX
DAVN
SDA-SW
SCL-SW
T1 INTERFACE CONTROL
7002 P89C664
µC
DATA0 ... DATA7
LCD-ENABLE
LCD-RW
LCD-RS
+5V-SW
LCD-BACKLIGHT
USW1
USW2
7010
7009 L9997
MOTOR CONTROL
FLASH PROG. MODE SWITCH
1400 20 MHz
7011 M24C32 EEPROM
7000 ST232 RESET
RST
7004 PCF1252 RS232 PROC
+12V-STBY
+12V-ENABLE
12V-AUDIO-OK
AUDIO SUPPLY CONTROL
+12V-AUDIO
L LCD BOARD
LCD-CONTRAST
LCD BACKLIGHT CONTROL
LCD-LED-BACKLIGHT
MOTOR +
MOTOR -
LCD DISPLAY
LCD PANEL SWING OUT MOTOR
DETECT SWITCH 1
DETECT SWITCH 2
ON MECHANICAL UNIT FOR SWING OUT LCD DISPLAY

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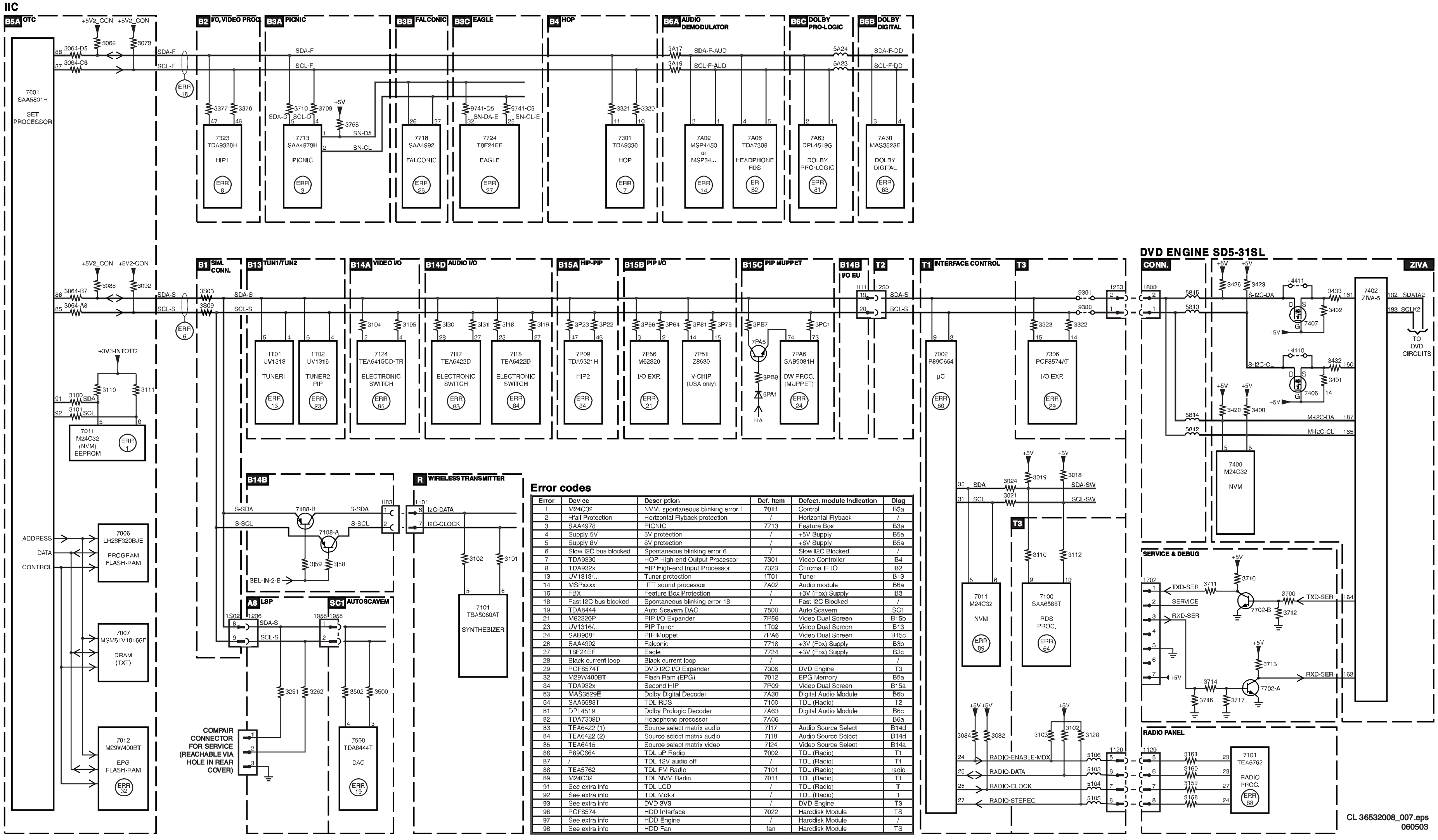
I2C IC's overview


IIC
B5A OTC
7001 SAA5801H SET PROCESSOR
B2 I/O, VIDEO PROC.
7323 TDA9320H HIP1
B3A PICNIC
7713 SAA4978H PICNIC
B3B FALCONIC
7718 SAA4992 FALCONIC
B3C EAGLE
7724 T8F24EF EAGLE
B4 HOP
7301 TDA9330 HOP
B6A AUDIO DEMODULATOR
7A02 MSP4450 or MSP34...
7A06 TDA7309 HEADPHONE FDS
B6C DOLBY PRO-LOGIC
7A63 DPL4519G DOLBY PRO-LOGIC
B6B DOLBY DIGITAL
7A30 MAS3528E DOLBY DIGITAL
SDA-F
SCL-F
SDA-F-AUD
SCL-F-AUD
SDA-F-DD
SCL-F-DD
B1 SIM. CONN.
B13 TUN1/TUN2
1T01 UV1318 TUNER1
1T02 UV1316 TUNER2 PIP
B14A VIDEO I/O
7124 TEA6415CD-TR ELECTRONIC SWITCH
B14D AUDIO I/O
7I17 TEA6422D ELECTRONIC SWITCH
7I18 TEA6422D ELECTRONIC SWITCH
B15A HIP-PIP
7P09 TDA9321H HIP2
B15B PIP I/O
7P56 M62320 I/O EXP.
7P51 Z8630 V-CHIP (USA only)
B15C PIP MUPPET
7PA6 SAB9081H DW PROC. (MUPPET)
B14B I/O EU
T2
T1 INTERFACE CONTROL
7002 P89C664 µC
T3
7306 PCF8574AT I/O EXP.
SDA-S
SCL-S
+3V3-INTOTC
7011 M24C32 (NVM) EEPROM
ADDRESS
DATA
CONTROL
7006 LH28F320BJE PROGRAM FLASH-RAM
7007 MSM51V18165F DRAM (TXT)
7012 M29W400BT EPG FLASH-RAM
B14B
S-SDA
S-SCL
SEL-IN-2-B
R WIRELESS TRANSMITTER
I2C-DATA
I2C-CLOCK
7101 TSA5060AT SYNTHESIZER
A8 LSP
SC1 AUTOSCAVEM
7500 TDA8444T DAC
COMPAIR CONNECTOR FOR SERVICE (REACHABLE VIA HOLE IN REAR COVER)
7011 M24C32 NVM
7100 SAA6588T RDS PROC.
RADIO-ENABLE-MDX
RADIO-DATA
RADIO-CLOCK
RADIO-STEREO
DVD ENGINE SD5-31SL
CONN.
ZIVA
7402 ZIVA-5
S-I2C-DA
S-I2C-CL
M-I2C-DA
M-I2C-CL
SDATA2
SCLK2
TO DVD CIRCUITS
7400 M24C32 NVM
SERVICE & DEBUG
TXD-SER
SERVICE
RXD-SER
RADIO PANEL
7101 TEA5762 RADIO PROC.
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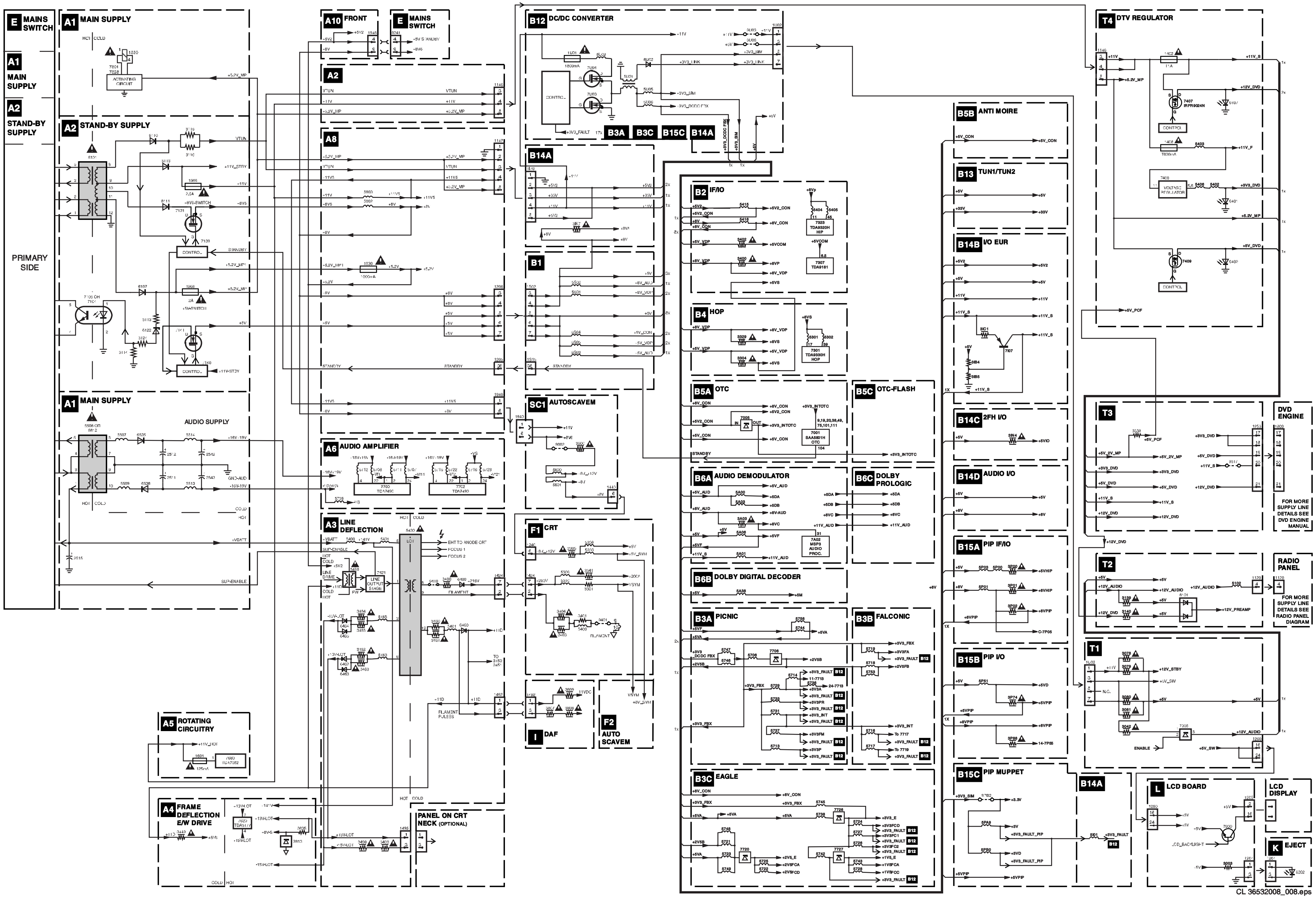
Error codes

Error	Device	Description	Def. Item	Defect. module Indication	Diag
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
2	Hfail Protection	Horizontal Flyback protection	/	Horizontal Flyback	/
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5V	5V protection	/	+5V Supply	B5a
5	Supply 8V	8V protection	/	+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6	/	Slow I2C Blocked	/
7	TDA9330	HOP High-end Output Processor	7301	Video Controller	B4
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxxx	ITT sound processor	7A02	Audio module	B6a
16	FBX	Feature Box Protection	/	+3V (Fbx) Supply	B3
18	Fast I2C bus blocked	Spontaneous blinking error 18	/	Fast I2C Blocked	/
19	TDA8444	Auto Scavem DAC	7500	Auto Scavem	SC1
21	M62320P	PIP I/O Expander	7P56	Video Dual Screen	B15b
23	UV1316/...	PIP Tuner	1T02	Video Dual Screen	B13
24	SAB9081	PIP Muppet	7PA6	Video Dual Screen	B15c
26	SAA4992	Falconic	7718	+3V (Fbx) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (Fbx) Supply	B3c
28	Black current loop	Black current loop	/		/
29	PCF8574T	DVD I2C I/O Expander	7306	DVD Engine	T3
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
34	TDA932x	Second HIP	7P09	Video Dual Screen	B15a
63	MAS3529E	Dolby Digital Decoder	7A30	Digital Audio Module	B6b
64	SAA6588T	TDL RDS	7100	TDL (Radio)	T2
81	DPL4519	Dolby Prologic Decoder	7A63	Digital Audio Module	B6c
82	TDA7309D	Headphone processor	7A06		B6a
83	TEA6422 (1)	Source select matrix audio	7I17	Audio Source Select	B14d
84	TEA6422 (2)	Source select matrix audio	7I18	Audio Source Select	B14d
85	TEA6415	Source select matrix video	7I24	Video Source Select	B14a
86	P89C664	TDL µP Radio	7002	TDL (Radio)	T1
87	/	TDL 12V audio off	/	TDL (Radio)	T1
88	TEA5762	TDL FM Radio	7101	TDL (Radio)	radio
89	M24C32	TDL NVM Radio	7011	TDL (Radio)	T1
91	See extra info	TDL LCD	/	TDL (Radio)	T
92	See extra info	TDL Motor	/	TDL (Radio)	T
93	See extra info	DVD 3V3	/	DVD Engine	T3
96	PCF8574	HDD Interface	7022	Harddisk Module	TS
97	See extra info	HDD Engine	/	Harddisk Module	/
98	See extra info	HDD Fan	fan	Harddisk Module	TS

Supply Lines Overview


E MAINS SWITCH
A1 MAIN SUPPLY
A2 STAND-BY SUPPLY
PRIMARY SIDE
A1 MAIN SUPPLY
A2 STAND-BY SUPPLY
A1 MAIN SUPPLY
AUDIO SUPPLY
A10 FRONT
E MAINS SWITCH
A2
A8
A6 AUDIO AMPLIFIER
A3 LINE DEFLECTION
A5 ROTATING CIRCUITRY
A4 FRAME DEFLECTION E/W DRIVE
PANEL ON CRT NECK (OPTIONAL)
B12 DC/DC CONVERTER
B3A
B3C
B15C
B14A
B14A
B1
SC1 AUTOSCAVEM
F1 CRT
I DAF
F2 AUTO SCAVEM
B2 IF/IO
B4 HOP
B5A OTC
B5C OTC-FLASH
B6A AUDIO DEMODULATOR
B6C DOLBY PROLOGIC
B6B DOLBY DIGITAL DECODER
B3A PICNIC
B3B FALCONIC
B3C EAGLE
B5B ANTI MOIRE
B13 TUN1/TUN2
B14B I/O EUR
B14C 2FH I/O
B14D AUDIO I/O
B15A PIP IF/IO
B15B PIP I/O
B15C PIP MUPPET
B14A
T4 DTV REGULATOR
T3
DVD ENGINE
FOR MORE SUPPLY LINE DETAILS SEE DVD ENGINE MANUAL
T2
RADIO PANEL
FOR MORE SUPPLY LINE DETAILS SEE RADIO PANEL DIAGRAM
T1
L LCD BOARD
LCD DISPLAY
K EJECT

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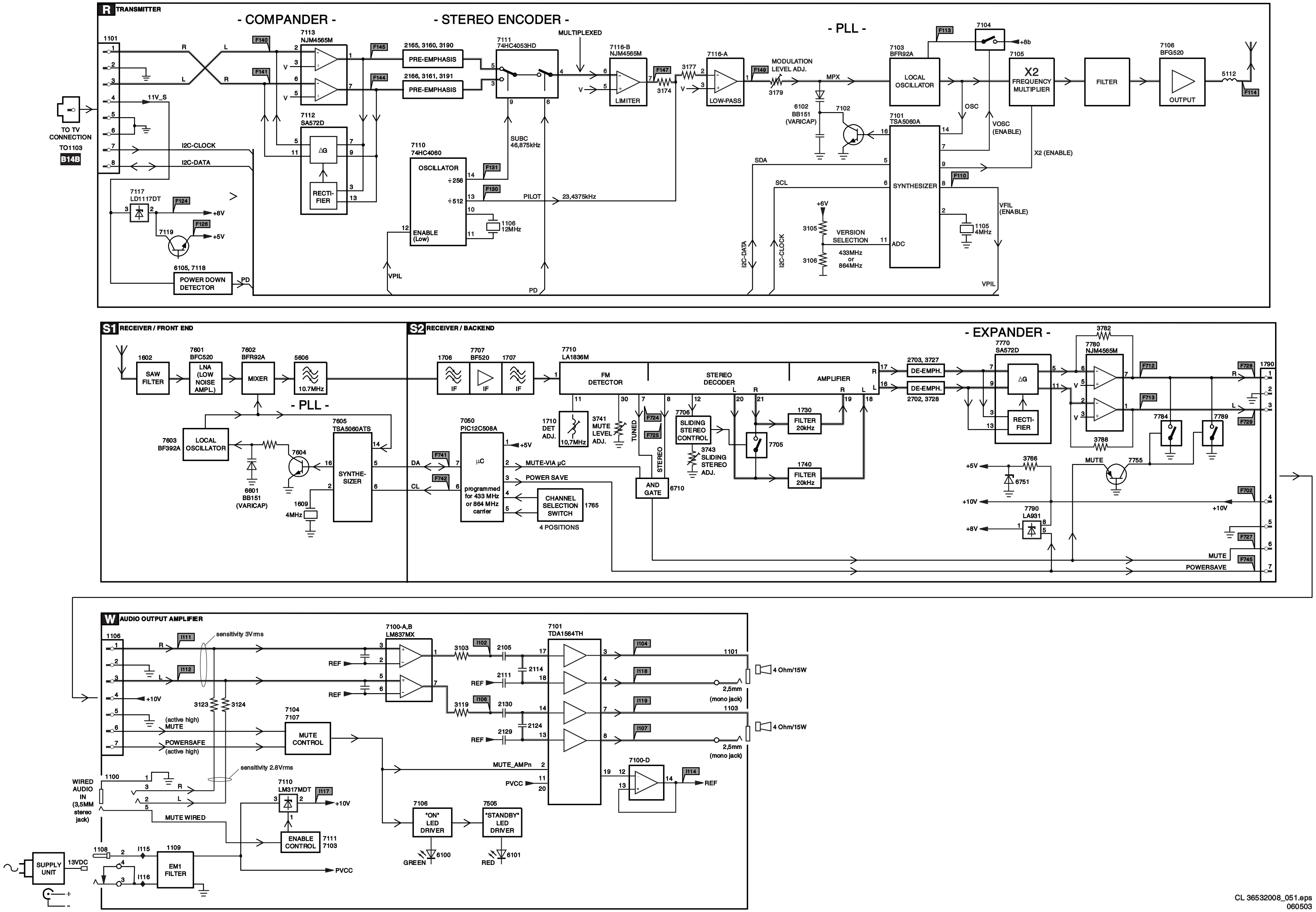
Block Diagram Wireless Kit

BLOCK DIAGRAM WIRELESS KIT


R TRANSMITTER
- COMPANDER -
- STEREO ENCODER -
- PLL -
1101
TO TV CONNECTION
TO1103
B14B
11V_S
I2C-CLOCK
I2C-DATA
7113 NJM4565M
7112 SA572D
ΔG
RECTI-FIER
F140
F141
F145
F144
2165, 3160, 3190
PRE-EMPHASIS
2166, 3161, 3191
PRE-EMPHASIS
7111 74HC4053HD
MULTIPLEXED
SUBC 46,875kHz
7110 74HC4060
OSCILLATOR
÷256
÷512
ENABLE (Low)
F131
F130
PILOT
23,4375kHz
1106 12MHz
VPIL
PD
7117 LD1117DT
F124
+8V
7119
F126
+5V
6105, 7118
POWER DOWN DETECTOR
7116-B NJM4565M
LIMITER
F147
3177
3174
7116-A
LOW-PASS
F149
MODULATION LEVEL ADJ.
3179
MPX
6102 BB151 (VARICAP)
7102
7103 BFR92A
LOCAL OSCILLATOR
F113
7104
+8b
7105
X2 FREQUENCY MULTIPLIER
FILTER
7106 BFG520
OUTPUT
5112
F114
OSC
VOSC (ENABLE)
X2 (ENABLE)
7101 TSA5060A
SYNTHESIZER
SDA
SCL
F110
VFIL (ENABLE)
ADC
1105 4MHz
+6V
3105
3106
VERSION SELECTION
433MHz or 864MHz
I2C-DATA
I2C-CLOCK
VPIL
S1 RECEIVER / FRONT END
1602
SAW FILTER
7601 BFC520
LNA (LOW NOISE AMPL.)
7602 BFR92A
MIXER
5606
10.7MHz
- PLL -
7603 BF392A
LOCAL OSCILLATOR
6601 BB151 (VARICAP)
7604
7605 TSA5060ATS
SYNTHE-SIZER
1609 4MHz
S2 RECEIVER / BACKEND
1706
IF
7707 BF520
IF
1707
IF
7710 LA1836M
FM DETECTOR
STEREO DECODER
AMPLIFIER
1710 DET ADJ.
10,7MHz
3741 MUTE LEVEL ADJ.
TUNED
F724
F725
STEREO
7706
SLIDING STEREO CONTROL
3743 SLIDING STEREO ADJ.
7705
1730 FILTER 20kHz
1740 FILTER 20kHz
7050 PIC12C508A
μC
programmed for 433 MHz or 864 MHz carrier
+5V
F741
F742
DA
CL
MUTE-VIA μC
POWER SAVE
CHANNEL SELECTION SWITCH
1765
4 POSITIONS
AND GATE
6710
- EXPANDER -
2703, 3727
DE-EMPH.
DE-EMPH.
2702, 3728
7770 SA572D
ΔG
RECTI-FIER
3782
7780 NJM4565M
3788
F712
F713
F728
F729
1790
7784
7789
MUTE
7755
3766
6751
+5V
+10V
F702
+10V
7790 LA931
+8V
F727
MUTE
F745
POWERSAVE
W AUDIO OUTPUT AMPLIFIER
1106
I111
sensitivity 3Vrms
I112
+10V
3123
3124
(active high) MUTE
POWERSAFE (active high)
7104 7107
MUTE CONTROL
7100-A,B LM837MX
REF
REF
3103
I102
2105
2111
2114
REF
3119
I106
2130
2129
2124
REF
7101 TDA1564TH
I104
I118
I119
I107
1101
4 Ohm/15W
2,5mm (mono jack)
1103
4 Ohm/15W
2,5mm (mono jack)
MUTE_AMPn
PVCC
7100-D
I114
REF
sensitivity 2.8Vrms
WIRED AUDIO IN (3,5MM stereo jack)
1100
MUTE WIRED
7110 LM317MDT
I117
+10V
ENABLE CONTROL
7111 7103
7106
"ON" LED DRIVER
6100
GREEN
7505
"STANDBY" LED DRIVER
6101
RED
SUPPLY UNIT
13VDC
1108
I115
I116
1109
EM1 FILTER
PVCC

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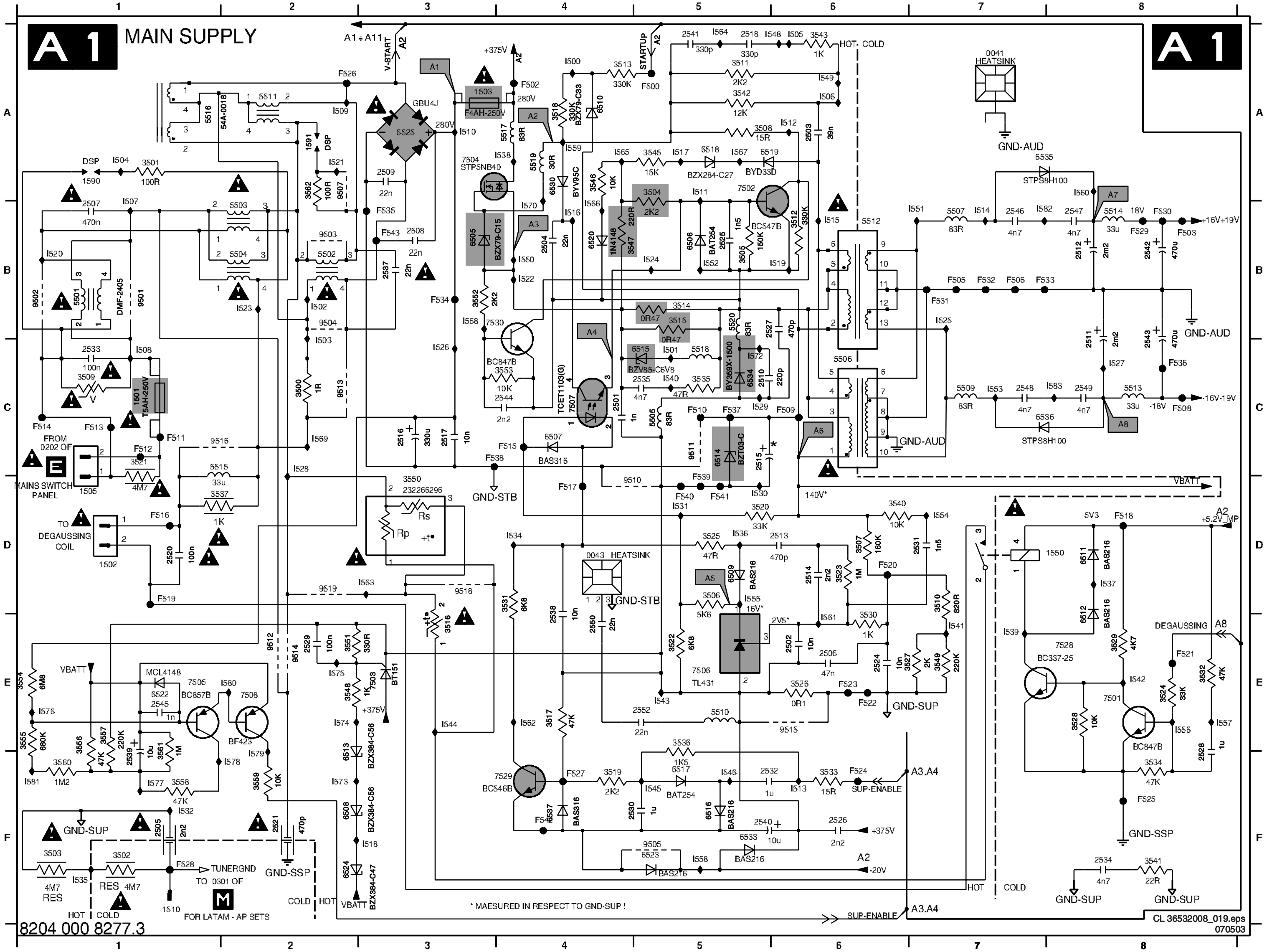
7. Circuit Diagrams and PWB Layouts

Large Signal Panel: Main Supply


A1
MAIN SUPPLY
A1+A11
V-START
A2
+375V
F502
280V
1503
F4AH-250V
GBU4J
6525
F526
5511
5516
54A-0018
1591
DSP
1590
I504
3501
100R
2507
470n
5503
5504
9503
5502
9504
5501
DMF-2405
9502
9501
2533
100n
3509
1501
T5AH-250V
F514
FROM 0202 OF
MAINS SWITCH PANEL
E
1505
3521
4M7
F512
F511
9516
5515
33u
3537
1K
TO DEGAUSSING COIL
1502
F516
2520
100n
F519
9519
9518
3516
7504
STP5NB40
6505
BZX79-C15
3552
2K2
7530
BC847B
3553
10K
2544
2n2
2516
330u
2517
10n
3550
232266296
Rs
Rp
GND-STB
6507
BAS316
7507
TCET1103(G)
0043 HEATSINK
2538
10n
2550
22n
3531
6K8
7529
BC548B
3517
47K
3519
2K2
6537
BAS316
2541
330p
2518
330p
3543
1K
HOT COLD
3511
2K2
3542
12K
3508
15R
2503
39n
STARTUP
3513
330K
F500
3518
330K
6510
BZX79-C33
6530
BYV95C
3546
10K
3545
15K
6518
BZX284-C27
6519
BYD33D
3504
2K2
7502
BC547B
3512
330K
6520
1N4148
3547
220R
6506
BAT254
2525
1n5
3505
150K
3514
0R47
3515
0R47
6515
BZV85-C6V8
2535
4n7
3535
47R
5520
3520
83R
6534
BY359X-1500
2510
220p
2527
470p
5505
83R
9511
6514
BZT03-C
2515
140V*
5512
5506
GND-AUD
0041 HEATSINK
6535
STPS8H100
A7
5507
83R
2546
4n7
2547
4n7
5514
33u
18V
F530
+16V+19V
2512
2m2
2542
470u
2511
2m2
2543
470u
5509
83R
2548
4n7
2549
4n7
5513
33u
-18V
-16V-19V
6536
STPS8H100
A8
VBATT
3540
10K
3525
47R
2513
470p
6509
BAS216
3506
5K6
7506
TL431
2502
10n
2506
47n
3526
0R1
3530
1K
3510
820R
3527
2K
3549
220K
3507
160K
2531
1n5
3523
1M
2514
2n2
2524
10n
3522
6K8
GND-SUP
2552
22n
5510
9515
3536
1K5
6517
BAT254
6516
BAS216
2532
1u
3533
15R
SUP-ENABLE
A3,A4
2540
10u
2526
2n2
+375V
6533
BAS216
9505
6523
BAS216
-20V
1550
5V3
F518
+5.2V
MP
6511
BAS216
6512
BAS216
DEGAUSSING
7528
BC337-25
3529
4K7
3532
47K
7501
BC847B
3524
33K
3528
10K
3534
47K
2528
1u
GND-SSP
2534
4n7
3541
22R
VBATT
3554
6M8
MCL4148
7505
BC857B
7508
BF423
6522
2545
1n
3555
680K
3556
47K
3557
220K
2539
10u
3561
1M
3560
1M2
3558
47K
3559
10K
2529
100n
3551
330R
7503
BT151
3548
1K
6513
BZX384-C56
6508
BZX384-C56
6524
BZX384-C47
9512
9514
2505
2n2
2521
470p
3503
4M7
RES
3502
RES 4M7
TUNERGND
TO 0301 OF
M
FOR LATAM - AP SETS
1510
HOT COLD
* MAESURED IN RESPECT TO GND-SUP !
8204 000 8277.3
CL 36532008_019.eps
070503
1
2
3
4
5
6
7
8
A
B
C
D
E
F

0041 A7
0043 D4
1501 C1
1502 D1
1503 A3
1505 D1
1510 F1
1550 D8
1590 A1
1591 A2
2501 C4
2502 E6
2503 A6
2504 B4
2505 F1
2506 E6
2507 B1
2508 B3
2509 A3
2510 C5
2511 C8
2512 B8
2513 D6
2514 D6
2515 C5
2516 C3
2517 C3
2518 A5
2520 D1
2521 F2
2524 E6
2525 B5
2526 F6
2527 B6
2528 F8
2529 E2
2530 F5
2531 D7
2532 F5
2533 C1
2534 F8
2535 C5
2537 B3
2538 E4
2539 F1
2540 F5
2541 A5
2542 B8
2543 C8
2544 C4
2545 E1
2546 B7
2547 B8
2548 C7
2549 C8
2550 E4
2552 E5
3500 C2
3501 A1
3502 F1
3503 F1
3504 A5
3505 B5
3506 D5
3507 D6
3508 A5
3509 C1
3510 D7
3511 A5
3512 B6
3513 A4
3514 B5
3515 B5
3516 E3
3517 E4
3518 A4
3519 F4
3520 D5
3521 C1
3522 E5
3523 D6
3524 E8
3525 D5
3526 E6
3527 E7
3528 E8
3529 E8
3530 E6
3531 D4
3532 E8
3533 F6
3534 F8
3535 C5
3536 E5
3537 D1
3540 D6
3541 F8
3542 A5
3543 A6
3545 A5
3546 A4
3547 B4
3548 E2
3549 E7
3550 D3
3551 E2
3552 B3
3553 C4
3554 E1
3555 E1
3556 E1
3557 E1
3558 F1
3559 F2
3560 F1
3561 E1
3562 A2
5501 B1
5502 B2
5503 B2
5504 B2
5505 C5
5506 C6
5507 B7
5509 C7
5510 E5
5511 A2
5512 B6
5513 C8
5514 B8
5515 C1
5516 A1
5517 A4
5518 C5
5519 A4
5520 B5
6505 B3
6506 B5
6507 C4
6508 F2
6509 D5
6510 A4
6511 D8
6512 E8
6513 F2
6514 C5
6515 C5
6516 F5
6517 F5
6518 A5
6519 A5
6520 B4
6522 E1
6523 F5
6524 F2
6525 A3
6530 A4
6533 F5
6534 C5
6535 A7
6536 C7
6537 F4
7501 E8
7502 A5
7503 E3
7504 A3
7505 E1
7506 E5
7507 C4
7508 E2
7528 E8
7529 F4
7530 B3
9501 B1
9502 B1
9503 B2
9504 B2
9505 F5
9507 A2
9510 D4
9511 C5
9512 E2
9513 C2
9514 E2
9515 E6
9516 C1
9518 D3
9519 D2
F500 A5
F502 A4
F503 B8
F505 B7
F506 B7
F508 C8
F509 C6
F510 C5
F511 C1
F512 C1
F513 C1
F514 C1
F515 C4
F516 D1
F517 D4
F518 D8
F519 D1
F520 D6
F521 E8
F522 E6
F523 E6
F524 F6
F525 F8
F526 A2
F527 F4
F528 F1
F529 B8
F530 B8
F531 B7
F532 B7
F533 B7
F534 B3
F535 B3
F536 C8
F537 C5
F538 C3
F539 D5
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F541 D5
F542 F4
F543 B3
I500 A4
I501 C5
I502 B2
I503 C2
I504 A1
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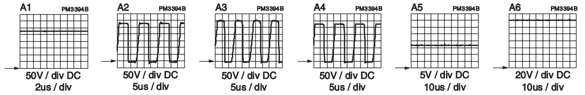
I509 A2
I510 A3
I511 A5
I512 A6
I513 F6
I514 B7
I515 B6
I516 B4
I517 A5
I518 F3
I519 B6
I520 B1
I521 A2
I522 B4
I523 B2
I524 B5
I525 B7
I526 C3
I527 C8
I528 C2
I529 C5
I530 D5
I531 D5
I532 F1
I534 D4
I535 F1
I536 D5
I537 D8
I538 A4
I539 E7
I540 C5
I541 E7
I542 E8
I543 E5
I544 E3
I545 F5
I546 F5
I548 A6
I549 A6
I550 B4
I551 B7
I552 B5
I553 C7
I554 D7
I555 D5
I556 E8
I557 E8
I558 F5
I559 A4
I560 A8
I561 E6
I562 E4
I563 D3
I564 A5
I565 A4
I566 B4
I567 A5
I568 B3
I569 C2
I570 B4
I572 C5
I573 F2
I574 E2
I575 E2
I576 E1
I577 F1
I578 F2
I579 F2
I580 E2
I581 F1
I582 B7
I583 C8

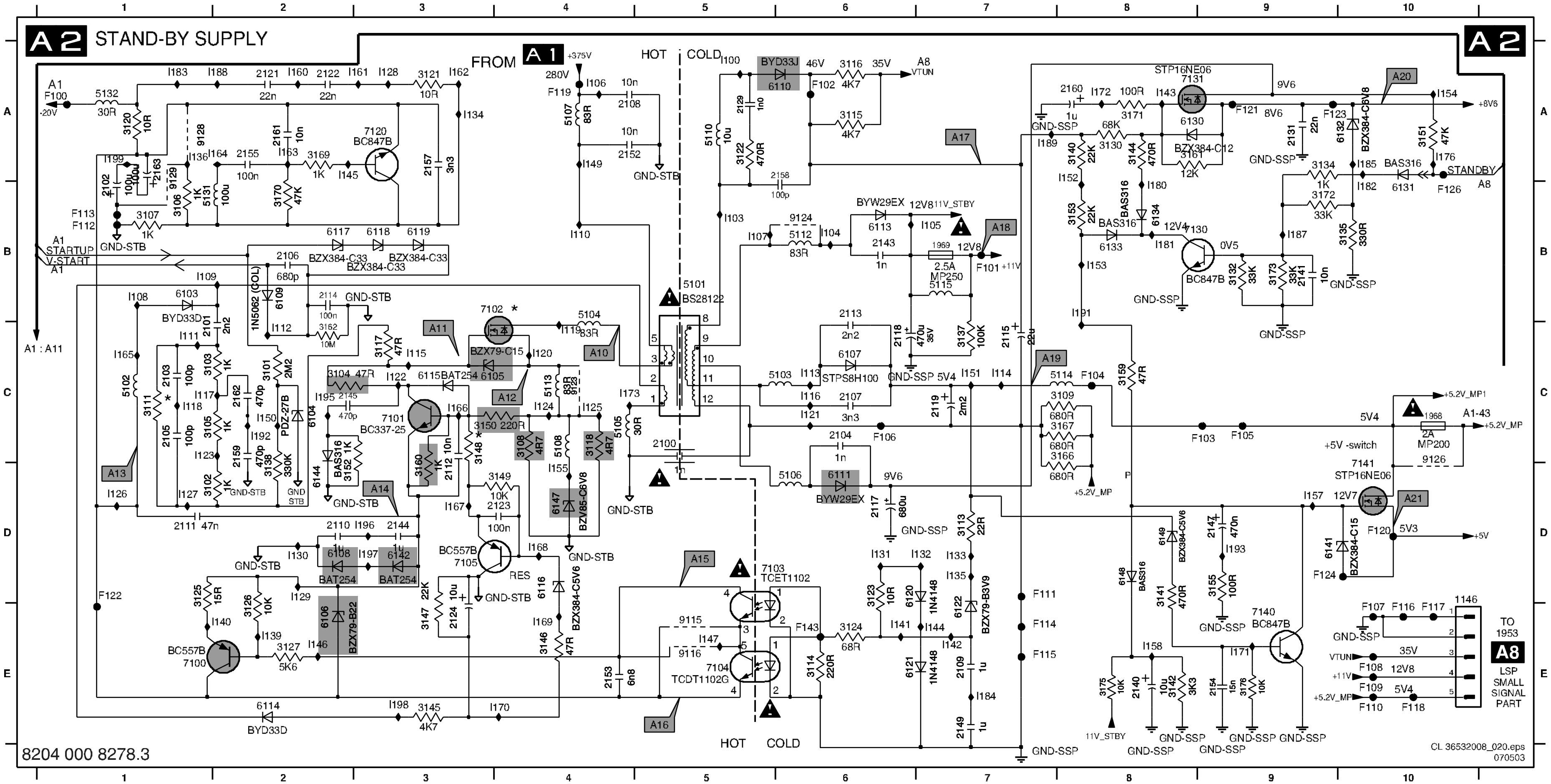


MAIN SUPPLY REPAIR KIT: 3122 785 90550

About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

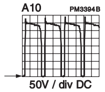
Large Signal Panel: Stand-by Supply

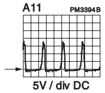
1146	D10
1968	C10
1969	B7
2100	C5
2101	C1
2102	B1
2103	C1
2104	C6
2105	C1
2106	B2
2107	C6
2108	A4
2109	E7
2110	D2
2111	D1
2112	D3
2113	B6
2114	B2
2115	C7
2117	D6
2118	C6
2119	C7
2121	A2
2122	A2
2123	D4
2124	E3
2129	A5
2131	A9
2140	E8
2141	B9
2143	B6
2144	D3
2145	C2
2147	D9
2149	E7
2152	A4
2153	E4
2154	E9
2155	A2
2157	A3
2158	A6
2159	C2
2160	A8
2161	A2
2162	C2
2163	A1
3101	C2
3102	D1
3103	C1
3104	C2
3105	C1
3106	B1
3107	B1
3108	C4
3109	C8
3111	C1
3113	D7
3114	E6
3115	A6
3116	A6
3117	C3
3118	C4
3120	A1
3121	A3
3122	A5
3123	D6
3124	E6
3125	D1
3126	E2
3127	E2
3130	A8
3132	B9
3134	A9
3135	B10
3137	C7
3138	D2
3140	A8
3141	D8
3142	E8
3144	A8
3145	E3
3146	E4
3147	E3
3148	C3
3149	D4
3150	C3
3151	A10
3152	D2
3153	B8
3155	D9
3159	C8
3160	D3
3161	A8
3162	C2
3166	C8
3167	C8
3169	A2
3170	B2
3171	A8
3172	B9
3173	B9
3175	E8
3176	E9
5101	B5
5102	C1
5103	C6
5104	B4
5105	C4
5106	D6
5107	A4
5108	C4
5110	A5
5112	B6
5113	C4
5114	C8
5115	B7
5131	B1
5132	A1
6103	B1
6104	C2
6105	C3
6106	E2
6107	C6
6108	D2
6109	B2
6110	A6
6111	D6
6113	B6
6114	E2
6115	C3
6116	D4
6117	B2
6118	B3
6119	B3
6120	D6
6121	E6
6122	E7
6130	A8
6131	B10
6132	A10
6133	B8
6134	B8
6141	D9
6142	D3
6144	D2
6147	D4
6148	D8
6149	D8
7100	E1
7101	C3
7102	B3
7103	E6
7104	E5
7105	D3
7120	A3
7130	B9
7131	A8
7140	E9
7141	D10
9115	E5
9116	E5
9123	C4
9124	B6
9126	C10
9128	A1
9129	A1
F100	A1
F101	B7
F102	A6
F103	C9
F104	C8
F105	C9
F106	C6
F107	E10
F108	E10
F109	E10
F110	E10
F111	D7
F112	B1
F113	B1
F114	E7
F115	E7
F116	E10
F117	E10
F118	E10
F119	A4
F120	D10
F121	A9
F122	D1
F123	A9
F124	D9
F126	B10
F143	E6
I100	A5
I103	B5
I104	B6
I105	B7
I106	A4
I107	B5
I108	B1
I109	B1
I110	B4
I111	C1
I112	C2
I113	C6
I114	C7
I115	C3
I116	C6
I117	C1
I118	C1
I119	C4
I120	C4
I121	C6
I122	C3
I123	C1
I124	C4
I125	C4
I126	D1
I127	D1
I128	A3
I129	D2
I130	D2
I131	D6
I132	D7
I133	D7
I134	A3
I135	D7
I136	A1
I139	E2
I140	E2
I141	E6
I142	E7
I143	A8
I144	E7
I145	A2
I146	E2
I147	E5
I149	A4
I150	C2
I151	C7
I152	A8
I153	B8
I154	A10
I155	D4
I157	D9
I158	E8
I160	A2
I161	A3
I162	A3
I163	A2
I164	A2
I165	C1
I166	C3
I167	D3
I168	D4
I169	E4
I170	E4
I171	E9
I172	A8
I173	C4
I176	A10
I180	B8
I181	B8
I182	B10
I183	A1
I184	E7
I185	A10
I187	B9
I188	A2
I189	A7
I191	B8
I192	C2
I193	D9
I195	C2
I196	D3
I197	D3
I198	E3
I199	A1

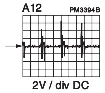

A2 STAND-BY SUPPLY
FROM A1
+375V
280V
HOT
COLD
A1
F100
-20V
5132 30R
3120 10R
I183
I188
2121 22n
I160
2122 22n
I161
I128
3121 10R
I162
I134
9128
2161 10n
7120 BC847B
2157 3n3
I199
2102 100u
2163
9129
I136
I164 2155 100n
I163 3169 1K
I145
3106 1K
5131 100u
3170 47K
F113
F112
3107 1K
GND-STB
6117 6118 6119
A1 STARTUP
V-START
A1
2106 680p
BZX384-C33
BZX384-C33
BZX384-C33
I109
I108
6103 BYD33D
1N5062 (COL)
6109
I112
2114 100n
3162 10M
GND-STB
A1 : A11
I165
5102
3111
2101 2n2
I111
2103 100p
3103 1K
3101 2M2
3104 47R
2145 470p
I195
6115 BAT254 6105
7102
BZX79-C15
I115
3117 47R
A11
A10
I119
5104 83R
I120
A12
I117
I118
2162 470p
I150
PDZ-27B
6104
BC337-25 7101
I122
I166
3150 220R
I124
5113 83R
9123
I125
I173
5105 30R
5101 BS28122
2105 100p
3105 1K
I192
2159 470p
3138 330K
I123
3102 1K
GND-STB
A13
I126
I127
2111 47n
BAS316
3152 1K
6144
A14
GND-STB
3160 1K
2112 10n
3148
3108 4R7
5108
3118 4R7
I155
6147 BZV85-C6V8
3149 10K
2123 100n
I167
GND-STB
2110 I196 2144 1u 1u
GND-STB
I130
6108
I197
6142
BAT254 BAT254
BC557B 7105
RES
I168
GND-STB
3125 15R
3126 10K
I129
I140
I139
3127 5K6
I146
6106 BZX79-B22
BC557B 7100
F122
3147 22K
2124 10u
6116
BZX384-C5V6
I169
3146 47R
2153 6n8
A15
A16
6114 BYD33D
I198 3145 4K7
I170
7103 TCET1102
9115
I147
9116
7104 TCDT1102G
F143
HOT COLD
I100
BYD33J 6110
46V
3116 4K7
35V
A8 VTUN
F102
3115 4K7
F119
I106
5107 83R
2108 10n
2152 10n
I149
GND-STB
I110
5110 10u
2129 1n0
3122 470R
2158 100p
I103
I107
9124
5112 83R
I104
BYW29EX
6113
12V8
11V_STBY
I105
A18
2143 1n
1969 2.5A MP250
5115
12V8
F101 +11V
2113 2n2
6107 STPS8H100
2118 470u 35V
3137 100K
2115 22u
5103
I113
I116
I121
2107 3n3
F106
GND-SSP
5V4
I151
I114
A19
5114
F104
2119 2m2
2100
2104 1n
5106
6111 BYW29EX
9V6
2117 680u
GND-SSP
3109 680R
3167 680R
3166 680R
+5.2V_MP
A17
2160 1u
I172
100R 3171
I143
STP16NE06 7131
9V6
6130
BZX384-C12
3161 12K
F121
8V6
2131 22n
F123
6132 BZX384-C5V8
A20
I154
+8V6
3151 47K
I176
STANDBY
A8
F126
BAS316 6131
I185
I182
3134 1K
3172 33K
3135 330R
I187
GND-SSP
I189
68K 3130
3140 22K
3144 470R
I180
I152
3153 22K
BAS316
6134
BAS316 6133
12V4
7130
I181
0V5
BC847B
3132 33K
3173 33K
2141 10n
GND-SSP
I153
I191
3159 47R
F103
F105
5V4
1966 2A MP200
A1-43
+5.2V_MP1
+5.2V_MP
+5V -switch
9126
7141 STP16NE06
I157
12V7
A21
F120
5V3
+5V
6149 BZX384-C5V6
2147 470n
I193
6141 BZX384-C15
F124
3113 22R
I133
I135
6122 BZX79-B3V9
I131
I132
3123 10R
6120 1N4148
I141
I144
3124 68R
3114 220R
6121 1N4148
I142
2109 1u
I184
2149 1u
F111
F114
F115
GND-SSP
6148 BAS316
3141 470R
3155 100R
I158
3175 10K
11V_STBY
2140 10u
3142 3K3
2154 15n
3176 10K
I171
7140 BC847B
GND-SSP
F107 F116 F117
1146
GND-SSP
VTUN
35V
+11V
F108 12V8
+5.2V_MP
F109 5V4
F110 F118
TO 1953
A8
LSP SMALL SIGNAL PART
8204 000 8278.3
CL 36532008_020.eps
070503

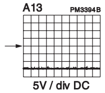
About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

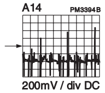
STANDBY SUPPLY REPAIR KIT: 3122 785 90530

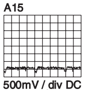
A10 PM3394B

50V / div DC
5us / div

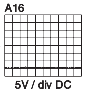
A11 PM3394B

5V / div DC
5us / div

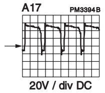
A12 PM3394B

2V / div DC
5us / div

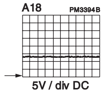
A13 PM3394B

5V / div DC
10us / div

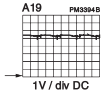
A14 PM3394B

200mV / div DC
10us / div

A15

500mV / div DC
5ms / div

A16

5V / div DC
5ms / div

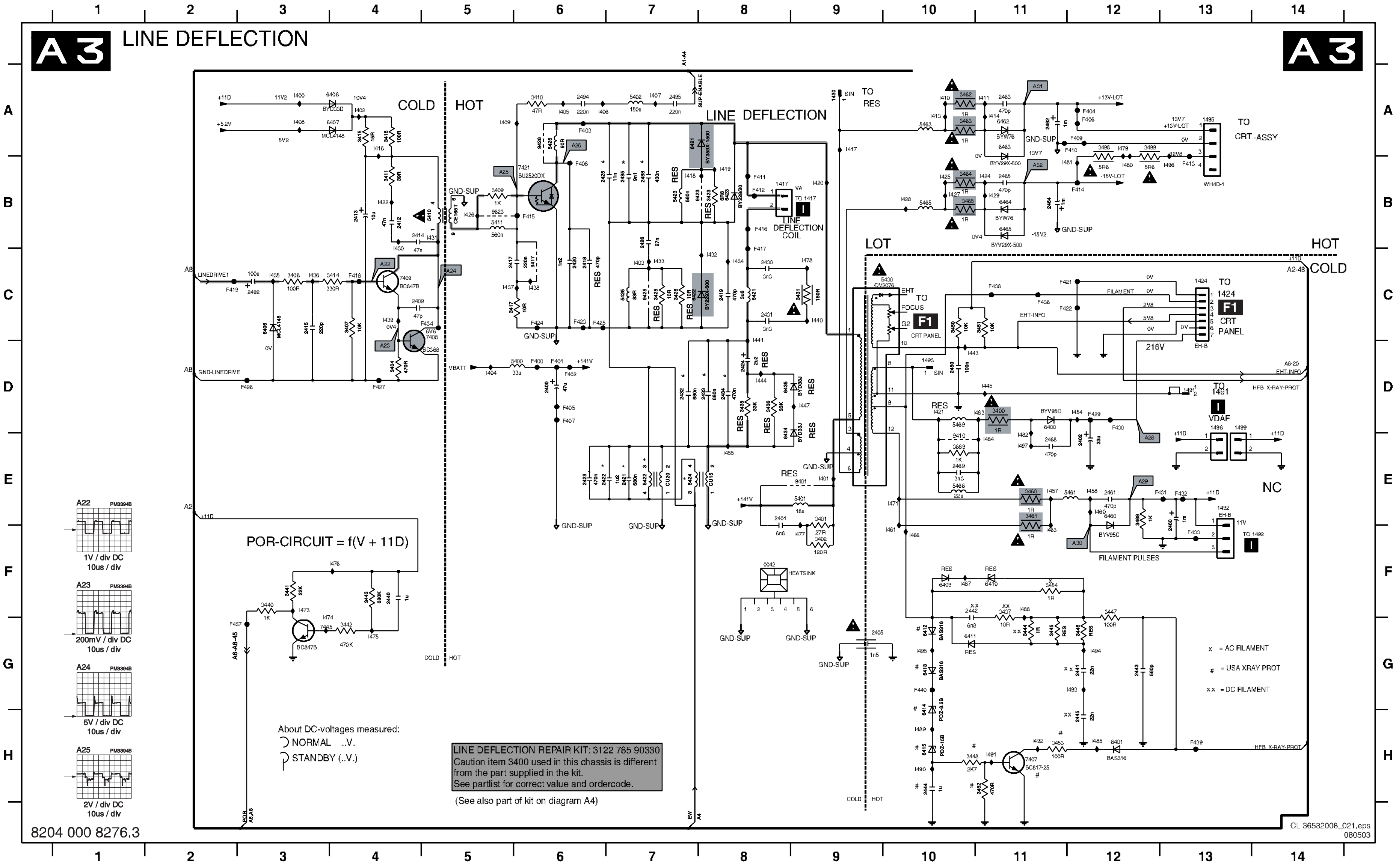
A17 PM3394B

20V / div DC
5us / div

A18 PM3394B

5V / div DC
5us / div

A19 PM3394B

1V / div DC
5us / div

Large Signal Panel: Line Deflection

0042	F8
1417	B8
1424	C13
1430	A9
1491	D12
1492	E14
1493	D10
1495	A13
1498	D13
1499	D13
2400	D6
2401	E8
2402	E12
2405	G9
2409	C4
2412	B4
2413	B4
2414	B4
2415	C3
2417	C5
2418	C6
2419	C8
2420	C6
2421	E7
2422	E6
2423	E6
2424	D8
2425	B6
2426	B7
2430	C8
2431	C8
2432	D7
2433	D8
2434	D8
2435	B7
2440	F4
2441	G12
2442	F10
2443	G12
2444	H10
2445	H12
2450	D10
2460	E13
2461	E12
2462	A11
2463	A11
2464	B11
2465	B11
2468	E11
2469	E10
2488	B7
2492	C3
2494	A6
2495	A7
3400	D11
3401	E9
3402	F9
3404	D4
3406	C3
3407	C4
3409	B5
3410	A6
3411	B4
3414	C4
3415	A4
3416	A4
3417	C5
3423	B8
3425	C7
3426	C7
3431	C9
3435	D8
3436	D8
3437	F11
3440	F3
3441	F3
3442	G4
3443	F4
3444	G11
3445	G11
3446	G12
3447	F12
3448	H10
3450	C10
3451	C11
3452	H11
3453	H11
3454	F11
3460	E11
3461	E11
3462	A10
3463	A10
3464	B10
3465	B10
3469	E12
3498	A12
3499	A12
3689	E10
5400	D6
5401	E9
5402	A7
5410	B5
5411	B5
5421	C8
5422	E7
5423	B7
5424	E7
5425	C7
5426	A6
5430	C10
5461	E12
5463	A10
5465	B10
5466	E10
5469	D10
6400	D11
6401	H12
6406	C3
6407	A4
6408	A4
6409	F10
6410	F11
6411	G10
6412	G10
6413	G10
6414	H10
6415	H10
6421	A7
6422	C7
6423	B8
6434	E8
6435	D8
6460	E12
6462	A11
6463	A11
6464	B11
6465	B11
7407	H11
7408	C5
7409	C4
7421	B6
7445	G3
9401	E9
9410	E10
9417	C6
9423	B8
9425	C7
9426	A6
9623	B5
F400	D6
F401	D6
F402	D6
F403	A6
F404	A12
F405	D6
F406	A12
F407	D6
F408	B6
F409	A12
F410	A12
F411	B8
F412	B8
F413	B13
F414	B12
F415	B6
F416	B8
F417	C8
F418	C4
F419	C2
F421	C11
F422	C11
F423	C6
F424	C6
F425	C6
F426	D3
F427	D4
F429	D12
F430	D12
F431	E13
F432	E13
F433	F13
F434	C5
F436	C11
F437	G2
F438	C11
F439	H13
F440	G10
I400	A3
I401	E9
I402	A4
I403	C7
I404	D5
I405	A6
I406	A6
I407	A7
I408	A3
I409	A5
I410	A10
I411	A11
I413	A10
I414	A11
I416	A4
I417	A9
I418	B7
I419	B8
I420	B9
I421	D10
I422	B4
I424	B11
I425	B10
I426	B5
I427	B10
I428	B10
I429	B11
I430	B4
I431	B5
I432	C8
I433	C7
I434	C8
I435	C3
I436	C3
I437	C5
I438	C6
I439	C4
I440	C9
I441	C8
I443	D10
I444	D8
I445	D11
I447	D9
I454	D12
I455	E8
I457	E11
I458	E12
I460	E12
I461	F10
I463	F11
I466	F10
I471	E10
I473	F3
I474	G3
I475	G4
I476	F4
I477	F9
I478	C9
I479	A12
I480	B12
I481	B11
I482	E11
I483	D11
I484	E11
I485	H12
I487	F10
I488	F11
I489	H10
I490	H10
I491	H11
I492	H11
I493	G12
I494	G12
I495	G10
I496	B13
I497	E11


A3
LINE DEFLECTION
COLD
HOT
LINE DEFLECTION
LINE DEFLECTION COIL
LOT
TO CRT-ASSY
TO 1424 F1 CRT PANEL
TO F1 CRT PANEL
TO RES
TO 1491 VDAF
NC
FILAMENT PULSES
HEATSINK
GND-SUP
A22 PM3394B 1V / div DC 10us / div
A23 PM3394B 200mV / div DC 10us / div
A24 PM3394B 5V / div DC 10us / div
A25 PM3394B 2V / div DC 10us / div
POR-CIRCUIT = f(V + 11D)
8204 000 8276.3
CL 36532008_021.eps
080503

About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

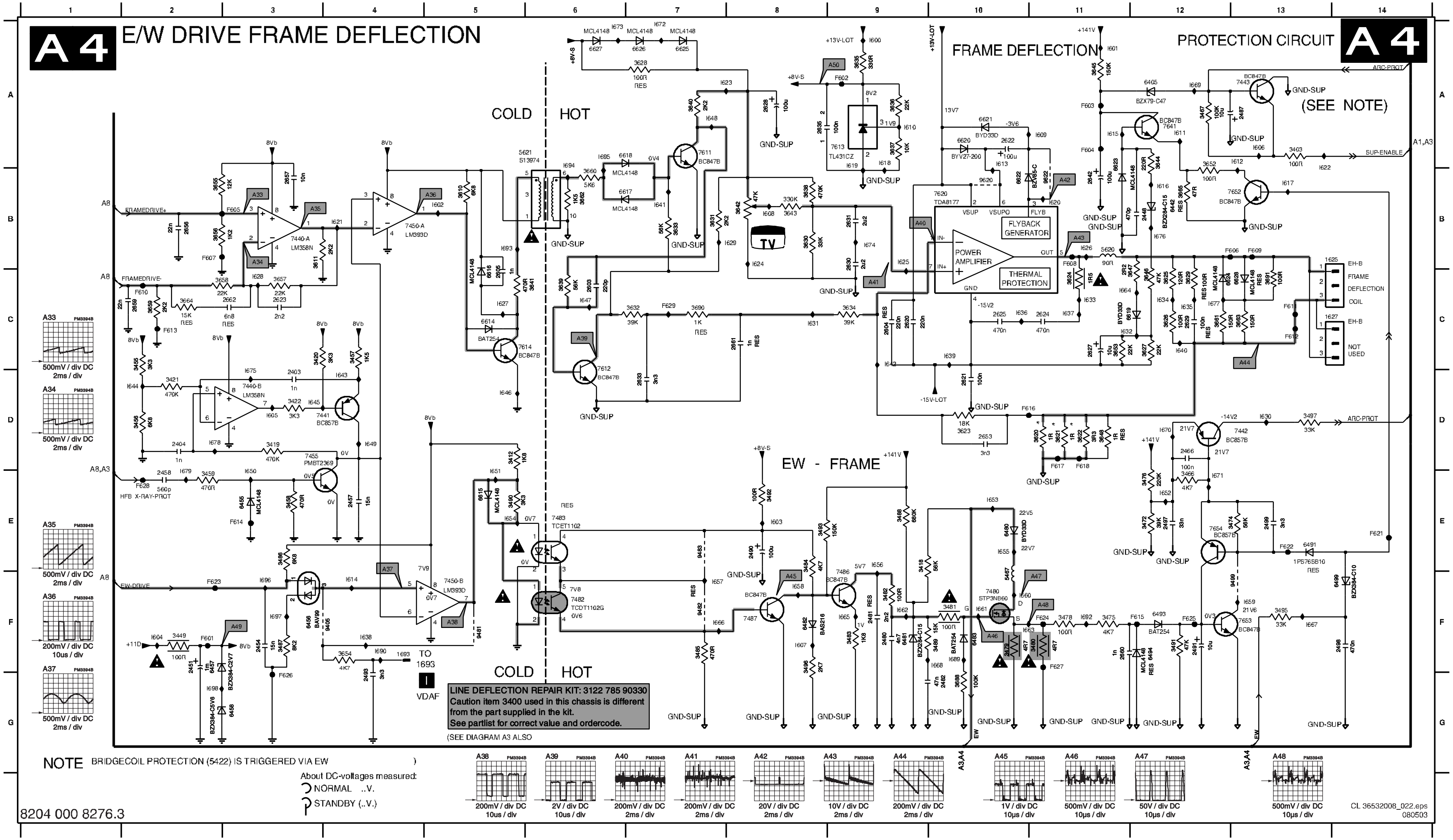
LINE DEFLECTION REPAIR KIT: 3122 785 90330
Caution item 3400 used in this chassis is different from the part supplied in the kit.
See partlist for correct value and ordercode.

(See also part of kit on diagram A4)

x = AC FILAMENT
# = USA XRAY PROT
xx = DC FILAMENT

Large Signal Panel: Frame Deflection E/W Drive

1625 B13
1627 C13
1693 F4
2403 D3
2404 D2
2448 B12
2451 F2
2454 F3
2457 E4
2458 E2
2466 D12
2480 F9
2481 F9
2482 G10
2487 A13
2490 E8
2491 F12
2493 G4
2497 E12
2498 F14
2499 E13
2603 C6
2604 C9
2605 C5
2620 C9
2621 D10
2622 A10
2623 C3
2624 C11
2625 C10
2627 C11
2628 A8
2629 C12
2630 B9
2631 B9
2633 D7
2635 A8
2642 B11
2653 D10
2656 B2
2657 B3
2659 C2
2660 F11
2661 C8
2662 C3
3403 A13
3412 D5
3418 E9
3419 D3
3420 C3
3421 D2
3422 D3
3449 F2
3455 C2
3456 D2
3457 C4
3458 E3
3459 E2
3466 E12
3467 A12
3472 E12
3474 E13
3475 F11
3476 E12
3478 F11
3479 F10
3480 F11
3481 F10
3482 F9
3483 F9
3484 E8
3485 F7
3486 E3
3487 F3
3488 E9
3489 F10
3490 E5
3491 F12
3492 E8
3493 E8
3495 F13
3496 F8
3497 D13
3610 B5
3611 B3
3620 D11
3621 D11
3622 D11
3623 D10
3624 C11
3625 C12
3626 C12
3627 C12
3628 A7
3629 C12
3630 B8
3631 B7
3632 C7
3633 B7
3634 C9
3635 A9
3636 A9
3637 A9
3638 B8
3639 C6
3640 A7
3641 C6
3642 B8
3643 B8
3644 A12
3645 A11
3646 C12
3647 C12
3648 D11
3652 A12
3653 C11
3654 F4
3655 B2
3656 B2
3657 C3
3658 C2
3659 C2
3660 B6
3661 C12
3662 B6
3663 C13
3664 C2
3665 B12
3688 G10
3690 C7
5467 F10
5620 B11
5621 A5
6405 A12
6442 B12
6455 E3
6456 F3
6457 F2
6458 G3
6480 E10
6481 F9
6482 F8
6483 F10
6491 E13
6493 F12
6494 F12
6499 F14
6614 C5
6615 E5
6616 C5
6617 B7
6618 A7
6619 C12
6620 A10
6621 A10
6622 B10
6623 A11
6624 C12
6625 A7
6626 A7
6627 A6
6628 C13
7440-A B3
7440-B D3
7441 D3
7442 D13
7443 A13
7450-A B4
7450-B F5
7455 D3
7480 F10
7482 F6
7483 E6
7486 F9
7487 F8
7611 A7
7612 D6
7613 A9
7614 C5
7620 B10
7641 A12
7652 B13
7653 F13
7654 E12
9405 F4
9481 F5
9482 F7
9483 E7
9499 F13
9620 B10
9622 B11
F601 F2
F602 A9
F603 A11
F604 A11
F605 B3
F606 B13
F607 B2
F608 B11
F609 B13
F610 C2
F611 C13
F612 C13
F613 C2
F614 E3
F615 F12
F616 D10
F617 D11
F618 D11
F621 E14
F622 E13
F623 F2
F624 F11
F625 F12
F626 G3
F627 F11
F628 E2
F629 C7
I600 A9
I601 A11
I602 B5
I603 E8
I604 F2
I605 D3
I606 A13
I607 F8
I608 B8
I609 A11
I610 A9
I611 A12
I612 A13
I613 A10
I614 F4
I615 A11
I616 B12
I617 B13
I618 A9
I619 A9
I620 B11
I621 B4
I622 A13
I623 A7
I624 B8
I625 B9
I626 B11
I627 C5
I628 C3
I629 B8
I630 D13
I631 C8
I632 C11
I633 C11
I634 C12
I635 C12
I636 C10
I637 C11
I638 F4
I639 C10
I640 C12
I641 B7
I642 C9
I643 D4
I644 D2
I645 D3
I646 D5
I647 C6
I648 A7
I649 D4
I650 E3
I651 E5
I652 E12
I653 E10
I654 E5
I655 E10
I656 E9
I657 F7
I658 F8
I659 F13
I660 F10
I661 F10
I662 F9
I663 F10
I664 C11
I665 F9
I666 F7
I667 F13
I668 F10
I669 A12
I670 D12
I671 E12
I672 A7
I673 A6
I674 B9
I675 D3
I676 B12
I677 C12
I678 D2
I679 E2
I689 F10
I690 F4
I692 F11
I693 B5
I694 A6
I695 A6
I696 F3
I697 F3
I698 G2



A 4
E/W DRIVE FRAME DEFLECTION
COLD
HOT
FRAME DEFLECTION
PROTECTION CIRCUIT
A 4
(SEE NOTE)
EW - FRAME
FRAMEDRIVE+
FRAMEDRIVE-
EW-DRIVE
HFB X-RAY-PROT
SUP-ENABLE
ARC-PROT
A1,A3
A8
A8,A3
+8V-S
+13V-LOT
+141V
-15V-LOT
+11D
8Vb
GND-SUP
7440-A LM358N
7440-B LM358N
7450-A LM393D
7450-B LM393D
7620 TDA8177
POWER AMPLIFIER
FLYBACK GENERATOR
THERMAL PROTECTION
VSUP
VSUPO
FLYB
IN-
IN+
OUT
GND
7613 TL431CZ
7611 BC847B
7612 BC847B
7614 BC847B
7441 BC857B
7455 PMBT2369
7483 TCET1102
7482 TCDT1102G
7486 BC847B
7487 BC847B
7480 STP3NB60
7641 BC847B
7652 BC847B
7443 BC847B
7442 BC857B
7654 BC857B
7653 BC847B
5621 S13974
TV
TO 1693
VDAF
1625 EH-B FRAME DEFLECTION COIL
1627 EH-B NOT USED
A33
500mV / div DC 2ms / div
A34
500mV / div DC 2ms / div
A35
500mV / div DC 2ms / div
A36
200mV / div DC 10us / div
A37
500mV / div DC 2ms / div
A38
200mV / div DC 10us / div
A39
2V / div DC 10us / div
A40
200mV / div DC 2ms / div
A41
200mV / div DC 2ms / div
A42
20V / div DC 2ms / div
A43
10V / div DC 2ms / div
A44
200mV / div DC 2ms / div
A45
1V / div DC 10μs / div
A46
500mV / div DC 10μs / div
A47
50V / div DC 10μs / div
A48
500mV / div DC 10μs / div
A3,A4
EW

LINE DEFLECTION REPAIR KIT: 3122 785 90330
Caution item 3400 used in this chassis is different from the part supplied in the kit.
See partlist for correct value and ordercode.

(SEE DIAGRAM A3 ALSO)

NOTE BRIDGECOIL PROTECTION (5422) IS TRIGGERED VIA EW)

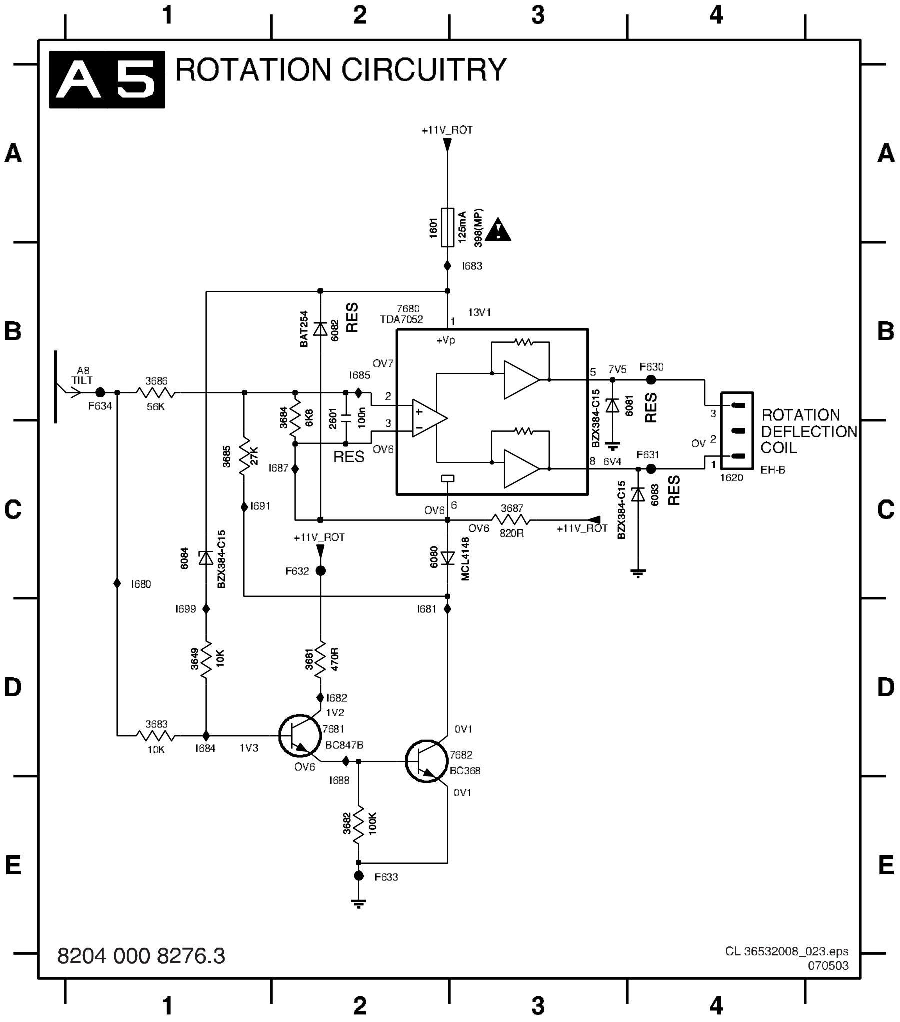
About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

8204 000 8276.3

CL 36532008_022.eps
080503

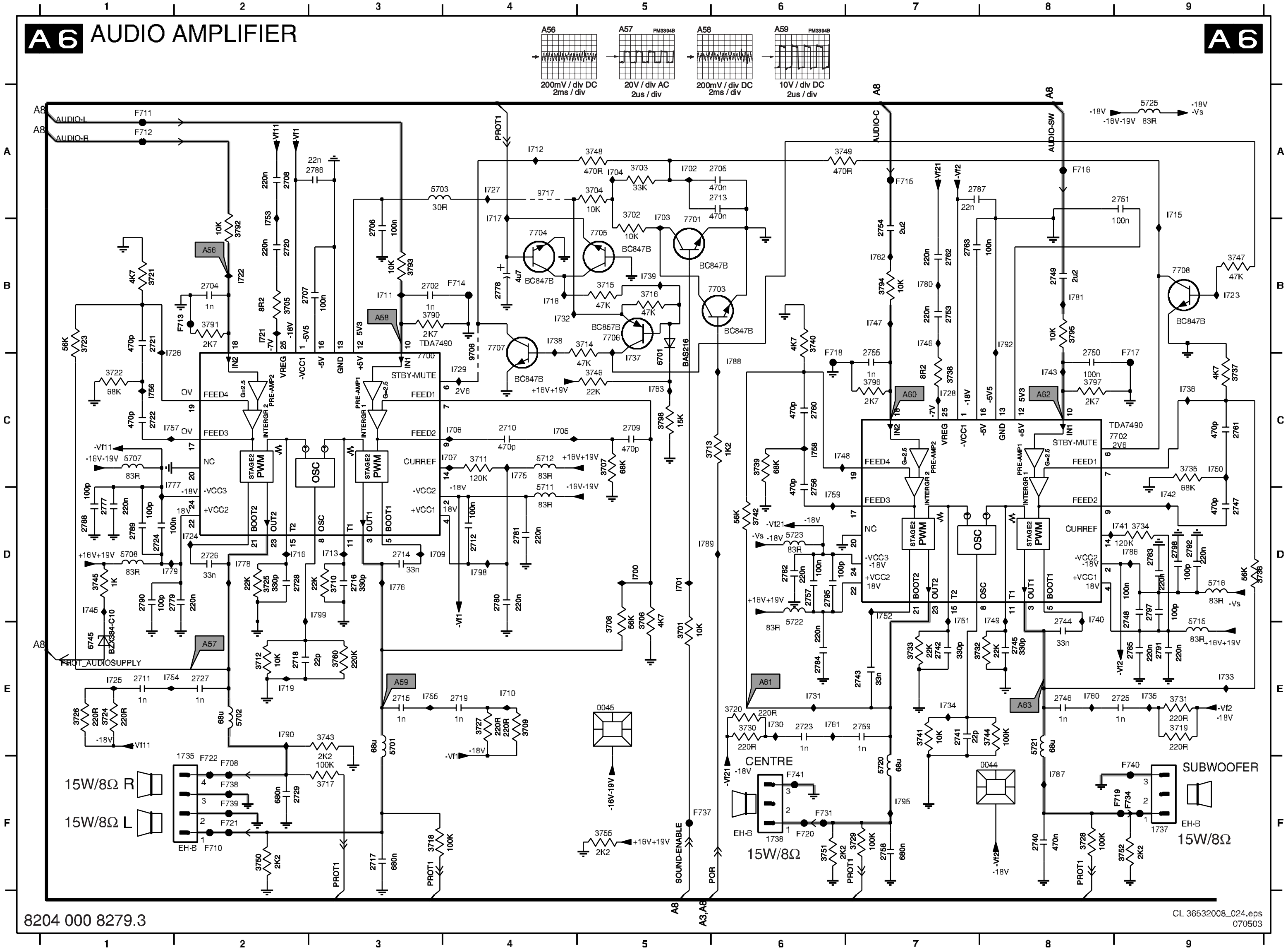
Large Signal Panel: Rotation Circuitry

1601 A2	3649 D1	3683 D1	3686 B1	6081 B3	6084 C1	7682 D3	F632 C2	I680 C1	I683 B3	I687 C2	I699 D1
1620 C4	3681 D2	3684 B2	3687 C3	6082 B2	7680 B2	F630 B4	F633 E2	I681 D2	I684 D1	I688 E2	
2601 B2	3682 E2	3685 C1	6080 C2	6083 C4	7681 D2	F631 C4	F634 B1	I682 D2	I685 B2	I691 C1	


1
2
3
4
A
B
C
D
E
A 5
ROTATION CIRCUITRY
+11V_ROT
1601
125mA
398(MP)
I683
7680
TDA7052
13V1
1
+Vp
BAT254
6082
RES
A8
TILT
F634
3686
56K
I685
OV7
2
3
3684
6K8
2601
100n
RES
OV6
3685
27K
I687
I691
5
7V5
F630
BZX384-C15
6081
RES
3
2
1
OV
ROTATION
DEFLECTION
COIL
1620
EH-B
8
6V4
F631
6083
RES
OV6
6
3687
820R
+11V_ROT
MCL4148
6080
+11V_ROT
F632
6084
BZX384-C15
I680
I699
I681
3649
10K
3681
470R
I682
1V2
7681
BC847B
0V1
7682
BC368
3683
10K
I684
1V3
OV6
I688
0V1
3682
100K
F633
8204 000 8276.3
CL 36532008_023.eps
070503

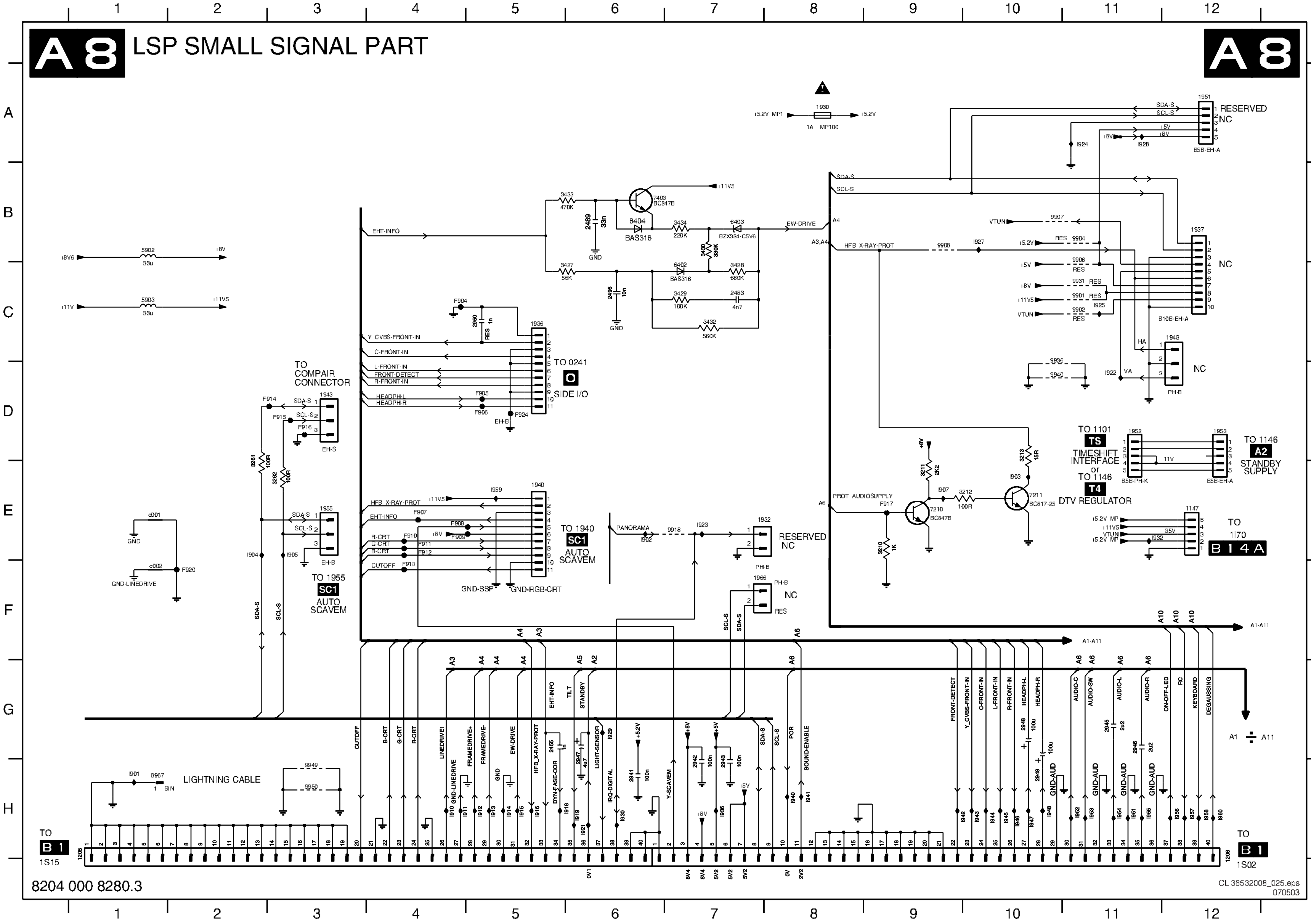
Personal Notes:

Large Signal Panel: Audio Amplifier


A6
AUDIO AMPLIFIER
A6
A56
200mV / div DC 2ms / div
A57
PM3394B
20V / div AC 2us / div
A58
200mV / div DC 2ms / div
A59
PM3394B
10V / div DC 2us / div
AUDIO-L
AUDIO-R
AUDIO-C
AUDIO-SW
PROT1
PROT_AUDIOSUPPLY
TDA7490
7700
7702
STBY-MUTE
FEED1
FEED2
FEED3
FEED4
CURRFB
OSC
PWM
VREG
BOOT1
BOOT2
OUT1
OUT2
BC847B
BC857B
BAS216
BZX384-C10
15W/8Ω R
15W/8Ω L
CENTRE
15W/8Ω
SUBWOOFER
15W/8Ω
EH-B
SOUND-ENABLE
POR
8204 000 8279.3
CL 36532008_024.eps
070503

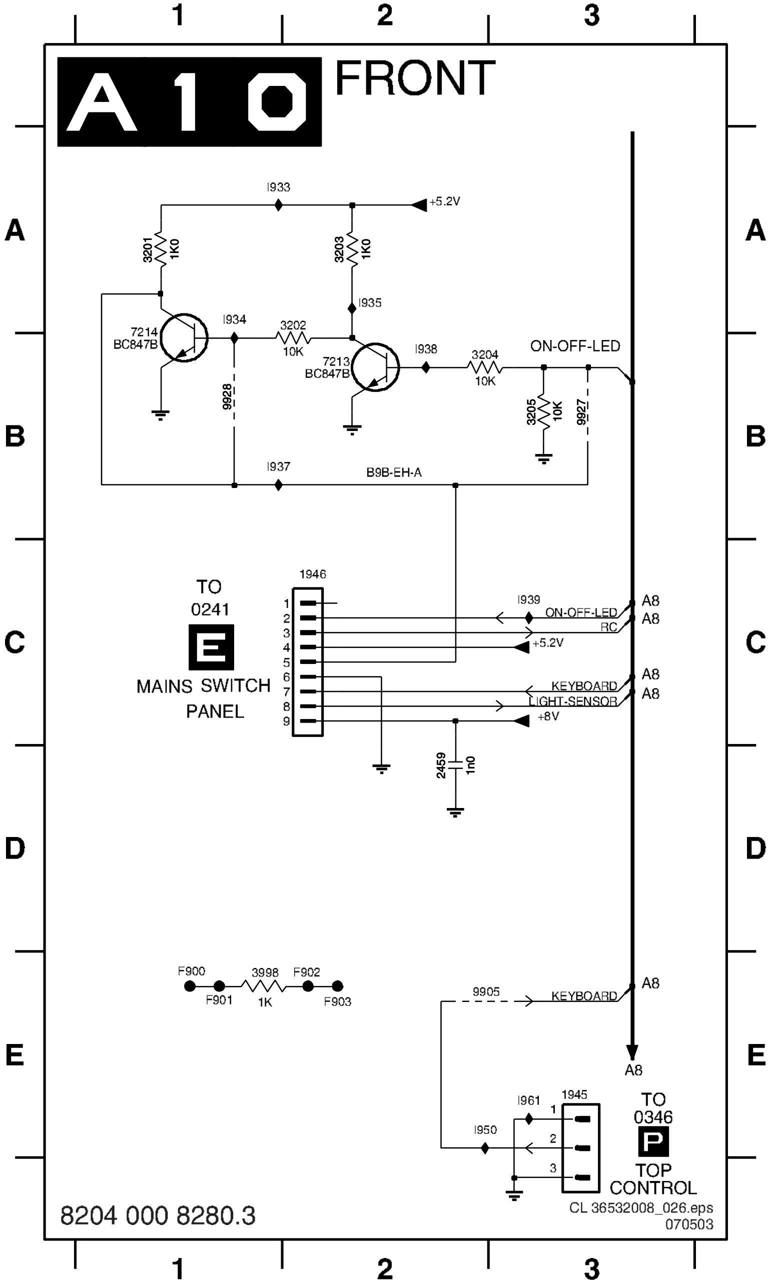
0044	F8
0045	E5
1735	E2
1737	F9
1738	F6
2702	B3
2704	B2
2705	A6
2706	B3
2707	B2
2708	A2
2709	C5
2710	C4
2711	E1
2712	D4
2713	A6
2714	D3
2715	E3
2716	D3
2717	F3
2718	E2
2719	E4
2720	B2
2721	B1
2722	C1
2723	E6
2724	D1
2725	E9
2726	D2
2727	E2
2728	D2
2729	F2
2740	F8
2741	E7
2742	E7
2743	E7
2744	E8
2745	E8
2746	E8
2747	D9
2748	D9
2749	B8
2750	C8
2751	A9
2753	B7
2754	B7
2755	C7
2756	C6
2757	D6
2758	F7
2759	E7
2760	C6
2761	C9
2762	B7
2763	B7
2777	D1
2778	B4
2779	D2
2780	D4
2781	D4
2782	D6
2783	D9
2784	E6
2785	E9
2786	A3
2787	A7
2788	D1
2789	D1
2790	D1
2791	E9
2792	D9
2795	D6
2797	D9
2798	D9
3701	E5
3702	A5
3703	A5
3704	A5
3705	B2
3706	D5
3707	C5
3708	E5
3709	E4
3710	D3
3711	C4
3712	E2
3713	C6
3714	B5
3715	B5
3716	B5
3717	F3
3718	F3
3719	E9
3720	E6
3721	B1
3722	C1
3723	B1
3724	E1
3725	D2
3726	E1
3727	E4
3728	F8
3729	F7
3730	E6
3731	E9
3732	E8
3733	E7
3734	D9
3735	C9
3736	D9
3737	C9
3738	C7
3739	C6
3740	B6
3741	E7
3742	D6
3743	E3
3744	E8
3745	D1
3746	C5
3747	B9
3748	A5
3749	A6
3750	F2
3751	F6
3752	F9
3755	F5
3760	E3
3790	B3
3791	B2
3792	B2
3793	B3
3794	B7
3795	B8
3796	C7
3797	C8
3798	C5
5701	E3
5702	E2
5703	A3
5707	C1
5708	D1
5711	D4
5712	C4
5715	E9
5716	D9
5720	F7
5721	E8
5722	E6
5723	D6
5725	A9
6701	C5
6745	E1
7700	B3
7701	B5
7702	C8
7703	B5
7704	B4
7705	B5
7706	B5
7707	B4
7708	B9
9706	B4
9717	A4
F708	F2
F710	F2
F711	A1
F712	A1
F713	B2
F714	B4
F715	A7
F716	A8
F717	C9
F718	C6
F719	F9
F720	F6
F721	F2
F722	F2
F731	F6
F734	F9
F737	F5
F738	F2
F739	F2
F740	F9
F741	F6
I700	D5
I701	D5
I702	A5
I703	A5
I704	A5
I705	C4
I706	C4
I707	C4
I709	D3
I710	E4
I711	B3
I712	A4
I713	D3
I715	A9
I716	D2
I717	A4
I718	B4
I719	E2
I721	B2
I722	B2
I723	B9
I724	D2
I725	E1
I726	B1
I727	A4
I728	C7
I729	C4
I730	E6
I731	E6
I732	B4
I733	E9
I734	E7
I735	E9
I736	C9
I737	C5
I738	B4
I739	B5
I740	D8
I741	D9
I742	D9
I743	C8
I745	D1
I746	B7
I747	B7
I748	C6
I749	D8
I750	C9
I751	D7
I752	D7
I753	A2
I754	E1
I755	E3
I756	C1
I757	C1
I758	C6
I759	D6
I760	E8
I761	E6
I762	B7
I763	C5
I775	C4
I776	D3
I777	C1
I778	D2
I779	D1
I780	B7
I781	B8
I786	D9
I787	F8
I788	C6
I789	D5
I790	E2
I792	B8
I795	F7
I798	D4
I799	D3

Large Signal Panel: Small Signal Part


A8
LSP SMALL SIGNAL PART
A8
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H
RESERVED
NC
BSB-EH-A
EHT-INFO
EW-DRIVE
BAS316
BC847B
BZX384-C5V6
TO COMPAIR CONNECTOR
TO 0241
O
SIDE I/O
TO 1940
SC1
AUTO SCAVEM
TO 1955
SC1
AUTO SCAVEM
RESERVED NC
TO 1101
TS
TIMESHIFT INTERFACE
or
TO 1146
T4
DTV REGULATOR
TO 1146
A2
STANDBY SUPPLY
TO 1170
B14A
LIGHTNING CABLE
TO B1 1S15
TO B1 1S02
A1-A11
8204 000 8280.3
CL 36532008_025.eps 070503

Ref	Position
1147	E12
1205	H1
1206	H12
1930	A8
1932	E7
1936	C5
1937	B12
1940	E5
1943	D3
1948	C12
1951	A12
1952	D11
1953	D12
1955	E3
1966	F7
2455	G5
2483	C7
2489	B6
2496	C6
2941	H6
2942	H7
2943	H7
2945	G11
2946	G11
2947	G6
2948	G10
2949	H10
2950	C5
3210	E9
3211	E9
3212	E10
3213	D10
3261	D2
3262	E3
3427	C6
3428	C7
3429	C7
3430	B7
3432	C7
3433	B6
3434	B7
5902	B1
5903	C1
6402	C7
6403	B7
6404	B6
7210	E9
7211	E10
7403	B6
8967	H1
9901	C11
9902	C11
9904	B11
9906	B11
9907	B10
9908	B9
9918	E7
9931	C11
9936	C10
9940	D10
9949	H3
9950	H3
F904	C4
F905	D5
F906	D5
F907	E4
F908	E4
F909	E4
F910	E4
F911	E4
F912	E4
F913	F4
F914	D3
F915	D3
F916	D3
F917	E9
F920	F2
F924	D5
I901	H1
I902	E6
I903	E10
I904	E2
I905	E3
I907	E9
I910	H4
I911	H4
I912	H5
I913	H5
I914	H5
I915	H5
I916	H5
I918	H6
I919	H6
I921	H6
I922	D11
I923	E7
I924	A11
I925	C11
I927	B10
I928	A11
I929	G6
I930	H6
I932	E11
I936	H7
I940	H8
I941	H8
I942	H10
I943	H10
I944	H10
I945	H10
I946	H10
I947	H10
I948	H10
I951	H11
I952	H11
I953	H11
I954	H11
I955	H11
I956	H12
I957	H12
I958	H12
I959	E5
I960	H12
c001	E1
c002	F1

Large Signal Panel: Front


A10 FRONT
1
2
3
A
B
C
D
E
I933
+5.2V
3201
1K0
3203
1K0
I935
7214
BC847B
I934
3202
10K
7213
BC847B
I938
3204
10K
ON-OFF-LED
3205
10K
9927
9928
I937
B9B-EH-A
TO
0241
E
MAINS SWITCH
PANEL
1946
I939
ON-OFF-LED
RC
+5.2V
KEYBOARD
LIGHT-SENSOR
+8V
A8
2459
1n0
F900
3998
1K
F902
F901
F903
9905
KEYBOARD
I961
1945
I950
TO
0346
P
TOP
CONTROL
8204 000 8280.3
CL 36532008_026.eps
070503

1945	E3
1946	B2
2459	D2
3201	A1
3202	A2
3203	A2
3204	B2
3205	B3
3998	E1
7213	B2
7214	B1
9905	E2
9927	B3
9928	B1
F900	E1
F901	E1
F902	E2
F903	E2
I933	A1
I934	A1
I935	A2
I937	B1
I938	B2
I939	C3
I950	E2
I961	E3

Personal Notes:

Layout Large Signal Panel (Top Side)

0041	F3
0042	C8
0043	C5
0044	E7
0045	F5
1146	G2
1147	G2
1205	F9
1206	F8
1417	B8
1424	A10
1430	C9
1491	A7
1492	A10
1493	A8
1495	C10
1498	A10
1499	D9
1501	A2
1502	A3
1503	C3
1505	A2
1510	D5
1550	C3
1590	A3
1591	B4
1601	G1
1620	F1
1625	B10
1627	B10
1693	D9
1735	G5
1737	E7
1738	E7
1901	E10
1902	F10
1930	G4
1932	E8
1936	E7
1937	G8
1940	F9
1943	G10
1945	G7
1946	G5
1948	G8
1951	F7
1952	G10
1953	G10
1955	E8
1966	F8
1968	G2
1969	F2
2100	E3
2101	D2
2102	E2
2104	F3
2106	C2
2107	F3
2108	C2
2111	D1
2113	F3
2114	C1
2115	E1
2117	G3
2118	F2
2119	F3
2121	E2
2122	E2
2124	C1
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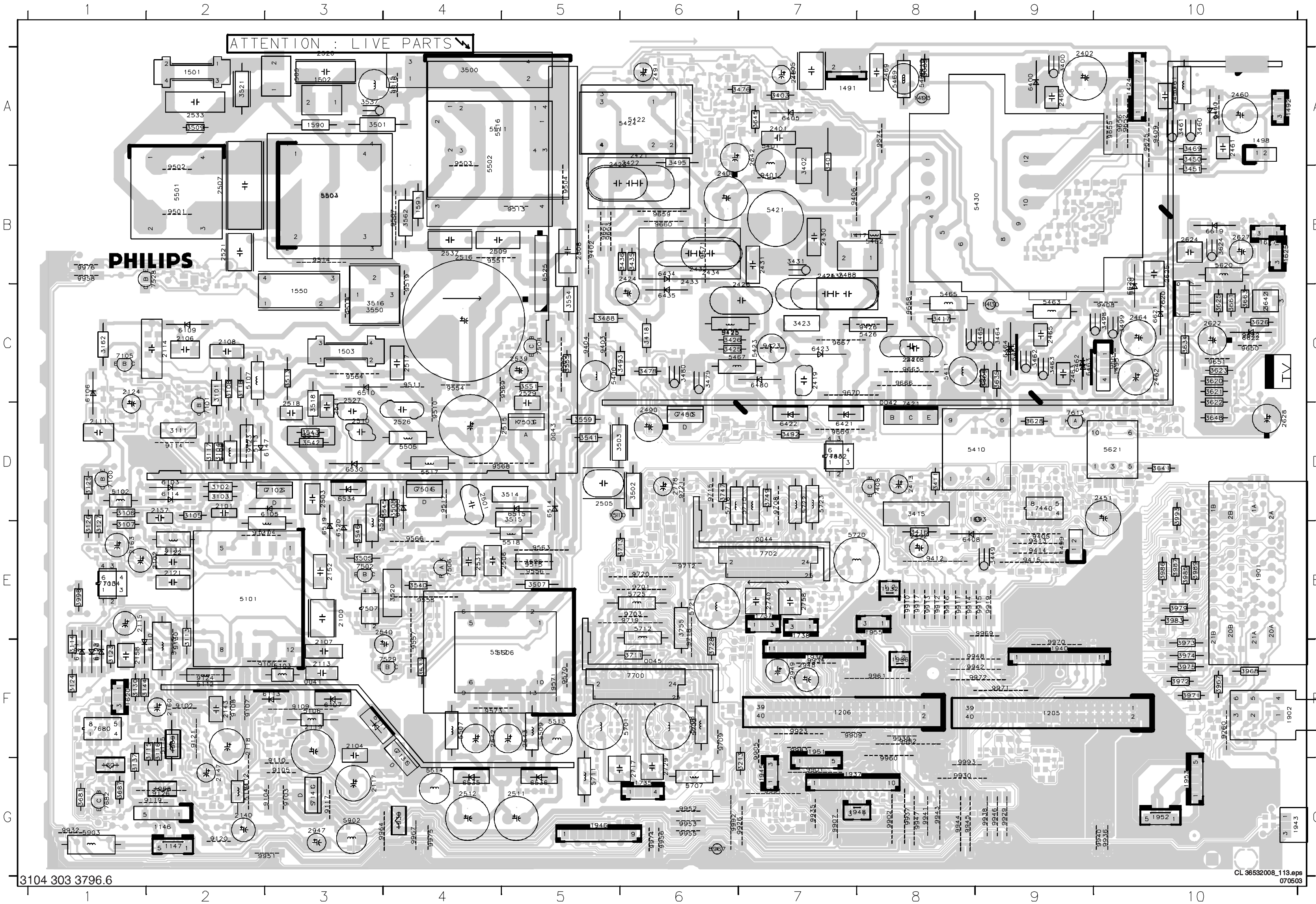

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Layout Large Signal Panel (Overview Bottom Side)

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5620 B1
5621 D1
5701 F6
5702 F5
5703 F5
5707 G5
5708 F5
5711 G6
5712 F5
5715 D4
5716 D5
5720 E4
5721 E5
5722 D4
5723 D4
5725 E6
5902 G8
5903 G10
6080 G10
6081 F10
6082 F10
6083 F10
6084 F10
6103 D9
6104 D9
6105 D9
6106 C10
6107 F8
6108 D10
6109 C9
6110 E9
6111 F8
6113 F8
6114 D9
6115 D9
6116 C10
6117 C9
6118 C10
6119 C10
6120 F10
6121 F10
6122 E10
6130 G8
6131 G9
6132 G9
6133 F9
6134 F10
6141 F8
6142 D10
6144 C9
6147 D9
6148 F9
6149 F9
6400 A2
6401 B1
6402 G2
6403 G2
6404 F2
6405 A4
6406 D3
6407 E3
6408 E3
6409 B2
6410 B2
6411 B2
6412 B2
6413 B2
6414 B2
6415 B1
6421 D4
6422 D4
6423 C4
6434 B5
6435 C5
6442 B1
6455 D3
6456 E1
6457 E2
6458 E2
6460 A1
6462 C2
6463 C2
6464 C2
6465 C2
6480 C4
6481 C5
6482 D5
6483 C5
6491 A5
6493 A5
6494 A5
6499 A5
6505 D7
6506 E8
6507 E8
6508 D6
6509 E7
6510 C7
6511 C9
6512 C9
6513 D6
6514 D6
6515 D7
6516 E7
6517 E7
6518 D8
6519 E8
6520 E8
6522 C6
6523 E8
6524 D6
6525 C6
6530 D8
6533 E7
6534 D8
6535 G7
6536 G6
6537 E7
6614 D2
6615 D3
6616 D2
6617 D1
6618 D1
6619 B1
6620 C1
6621 C1
6622 C1
6623 A5
6624 B1
6625 D2
6626 D2
6627 D2
6628 B1
6701 E5
6745 G5
6950 E1
6951 F1
6953 E1
6954 E1
6955 E1
6956 F1
6957 E1
6958 E1
6959 F1
6960 E1
6961 F1
6962 F1
7100 D10
7101 C9
7102 D8
7103 E10
7104 E10
7105 C10
7120 E9
7130 F10
7131 G7
7140 F8
7141 G8
7210 F5
7211 F4
7213 G4
7214 G4
7403 F2
7407 B1
7408 D3
7409 D3
7421 C3
7440 D2
7441 D2
7442 A5
7443 A4
7445 D2
7450 D1
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7480 D5
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7483 D3
7486 D5
7487 D4
7501 C9
7502 E8
7503 D6
7504 D7
7505 C6
7506 E7
7507 E8
7508 C6
7528 C9
7529 F8
7530 E7
7611 D1
7612 C1
7613 D2
7614 D1
7620 B1
7641 A4
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7653 A5
7654 A5
7680 F10
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7682 G10
7700 F5
7701 E5
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7703 E5
7704 E5
7705 D5
7706 E5
7707 E5
7708 D4
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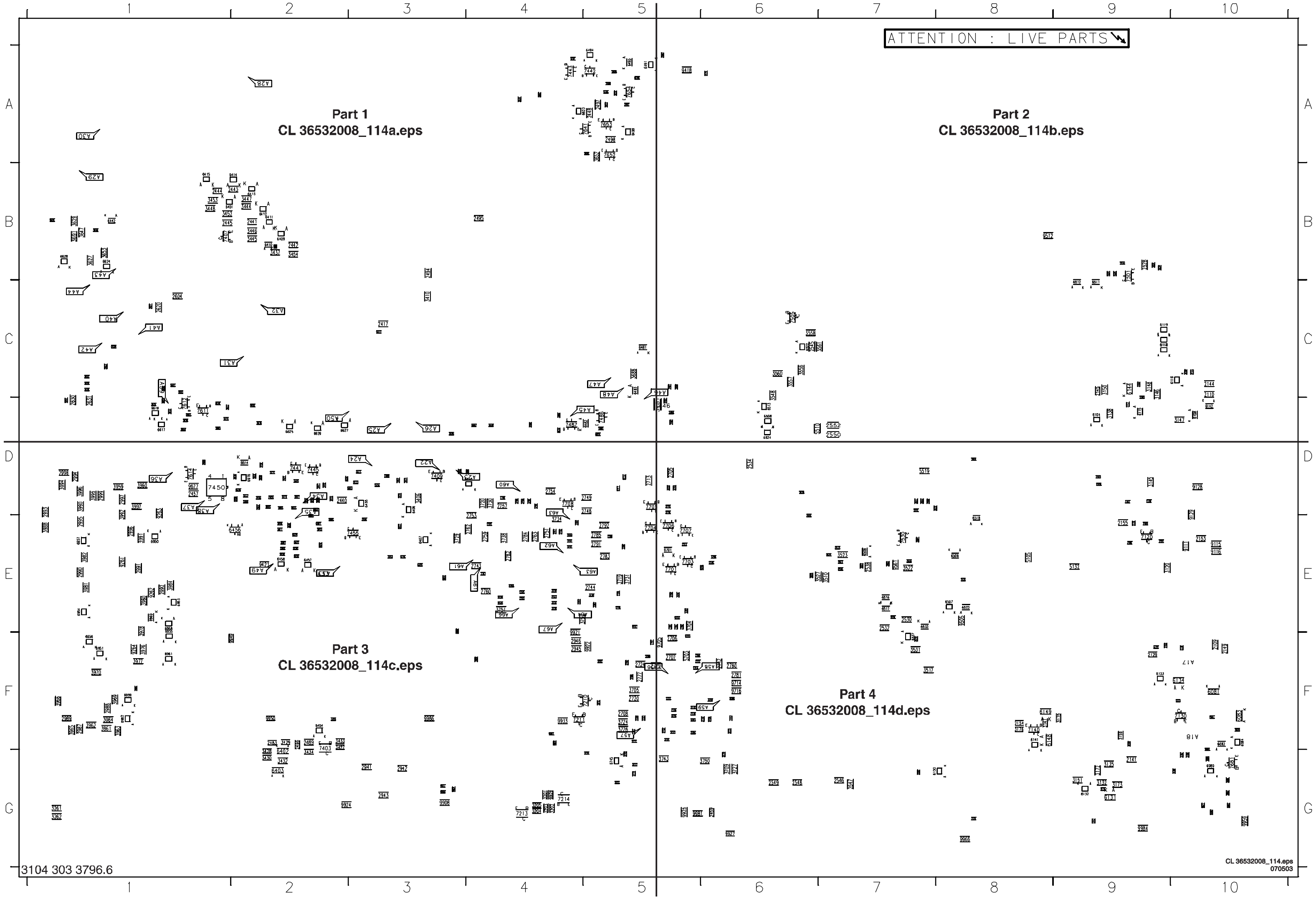
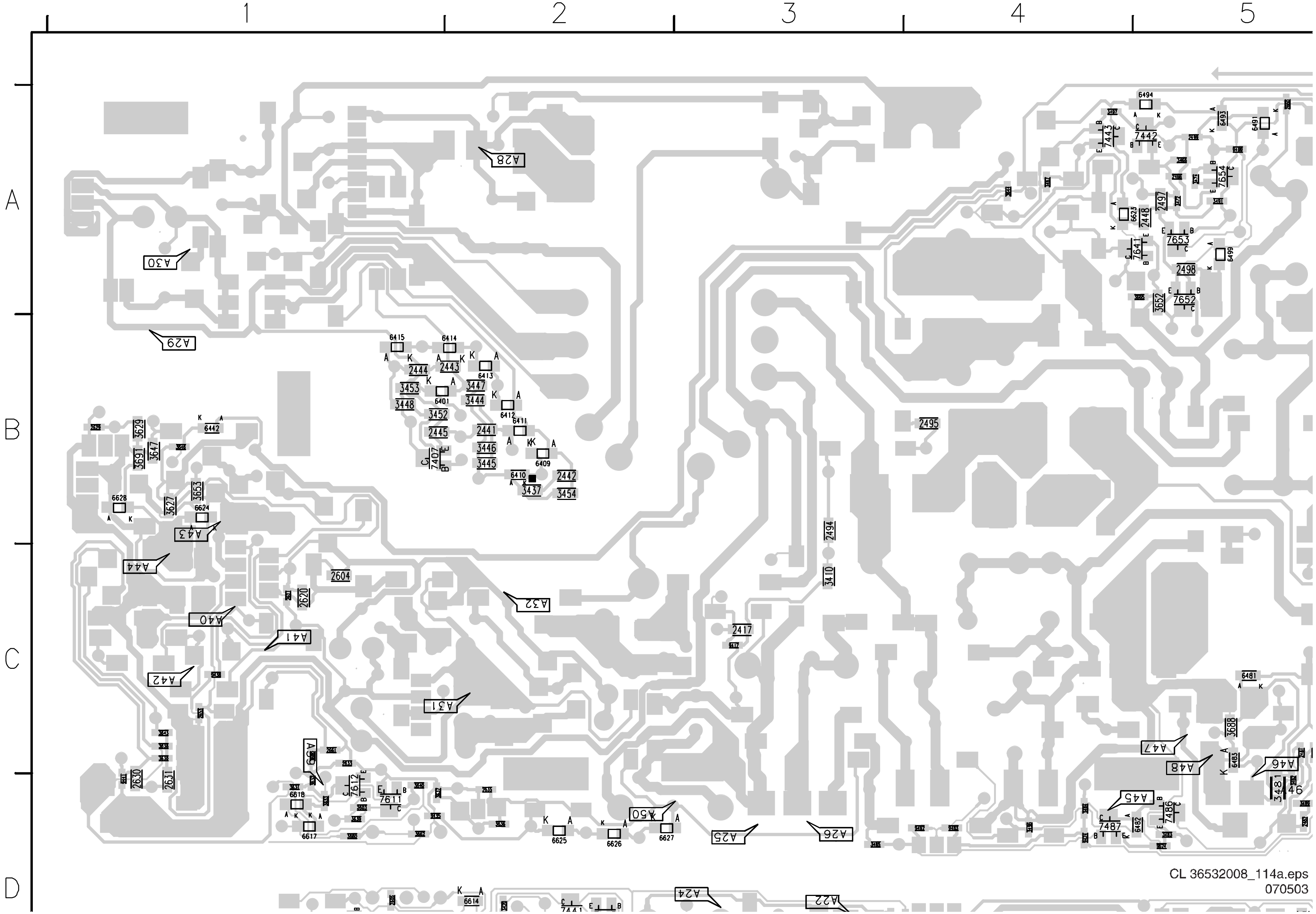
9102 F9
9103 G8
9104 G8
9105 G8
9106 F8
9107 F9
9108 F9
9109 F8
9110 G8
9111 E10
9112 G9
9114 D9
9115 E10
9116 E10
9117 G8
9119 G9
9120 G9
9121 F9
9123 D9
9124 F9
9126 G9
9127 E9
9128 D10
9129 D10
9130 F9
9260 F1
9261 E1
9262 E1
9263 D1
9264 F1
9401 B4
9402 B6
9403 C6
9404 C6
9405 E2
9406 B4
9408 C1
9409 A1
9410 A3
9411 A1
9412 E3
9413 E2
9414 E2
9415 E2
9417 C3
9418 A5
9421 E2
9422 E3
9423 C4
9424 D4
9425 C5
9426 C3
9427 E2
9428 D2
9429 E2
9430 E2
9431 D2
9432 E2
9433 D3
9434 D2
9435 D1
9436 D2
9437 E3
9438 C1
9440 G10
9441 D1
9443 D3
9481 E2
9482 D4
9483 D4
9499 A5
9501 B9
9502 B9
9503 B7
9504 B6
9505 E8
9507 B7
9510 D7
9511 C7
9512 B8
9513 B6
9514 B8
9515 E6
9516 A7
9517 D7
9518 B8
9519 B7
9551 B7
9554 C7
9556 E6
9557 E7
9558 E7
9560 C6
9561 E7
9563 E6
9564 C8
9566 E7
9568 D7
9569 C7
9570 F6
9571 F6
9573 F6
9620 B1
9621 G10
9622 C1
9623 C3
9624 D5
9650 C1
9651 C1
9652 A1
9655 A1
9656 A1
9658 C3
9659 B5
9660 B5
9661 B6
9663 B5
9664 C1
9665 C3
9666 C3
9667 C4
9669 D4
9670 C4
9671 B5
9674 A3
9675 A1
9676 E2
9677 D1
9701 E5
9702 E5
9703 E5
9705 F5
9706 E6
9707 E5
9708 E4
9709 F5
9711 D5
9712 E5
9713 D5
9714 F6
9715 D5
9716 F6
9717 F5
9718 E5
9719 E5
9720 E5
9721 D5
9901 G3
9902 G3
9903 F4
9904 G3
9905 F4
9906 G3
9907 G4
9908 G3
9909 F4
9910 E3
9911 E3
9912 E3
9913 E3
9914 E3
9915 E2
9916 E3
9917 E3
9918 E3
9919 E2
9920 F4
9921 E4
9922 F5
9923 F4
9924 G2
9925 G5
9926 G4
9927 G6
9928 G4
9929 G2
9930 G3
9931 G3
9932 G10
9933 F4
9934 F4
9935 G4
9936 G1
9937 G3
9938 G2
9939 F3
9940 G1
9941 G3
9942 F2
9943 G3
9944 G3
9945 G3
9946 G2
9947 G3
9948 F2
9949 F2
9950 F2
9951 G8
9952 G5
9953 G5
9955 G5
9956 G5
9958 B10
9959 G10
9960 F3
9961 F3
9964 G8
9966 G8
9967 G7
9969 E2
9970 F2
9971 F2
9972 F2
9974 G5
9975 G7
9976 B10
9981 G5
9982 F3
9983 F4
9984 G9
9986 F3
9991 G4
9992 G5
9993 G3
9994 E3



Layout Large Signal Panel (Part 1 Bottom Side)


1
2
3
4
5
A
B
C
D
A28
A30
A29
6415
6414
2444
2443
6413
3453
6401
3447
3444
3448
3452
6412
6411
2445
2441
3446
3445
7407
6409
6410
2442
3437
3454
6442
3629
3691
3647
3653
3627
6628
6624
A43
A44
2604
2620
A32
A40
A41
A42
A31
A39
2630
2631
6618
7612
7611
6617
6625
6626
6627
A50
A25
A26
2495
2494
3410
2417
6494
6493
6491
7443
7442
7654
2497
2448
6623
7641
7653
6499
2498
3652
7652
6481
3688
6483
A47
A48
A46
3481
A45
7486
7487
6482
6614
7441
A24
A22

CL 36532008_114a.eps
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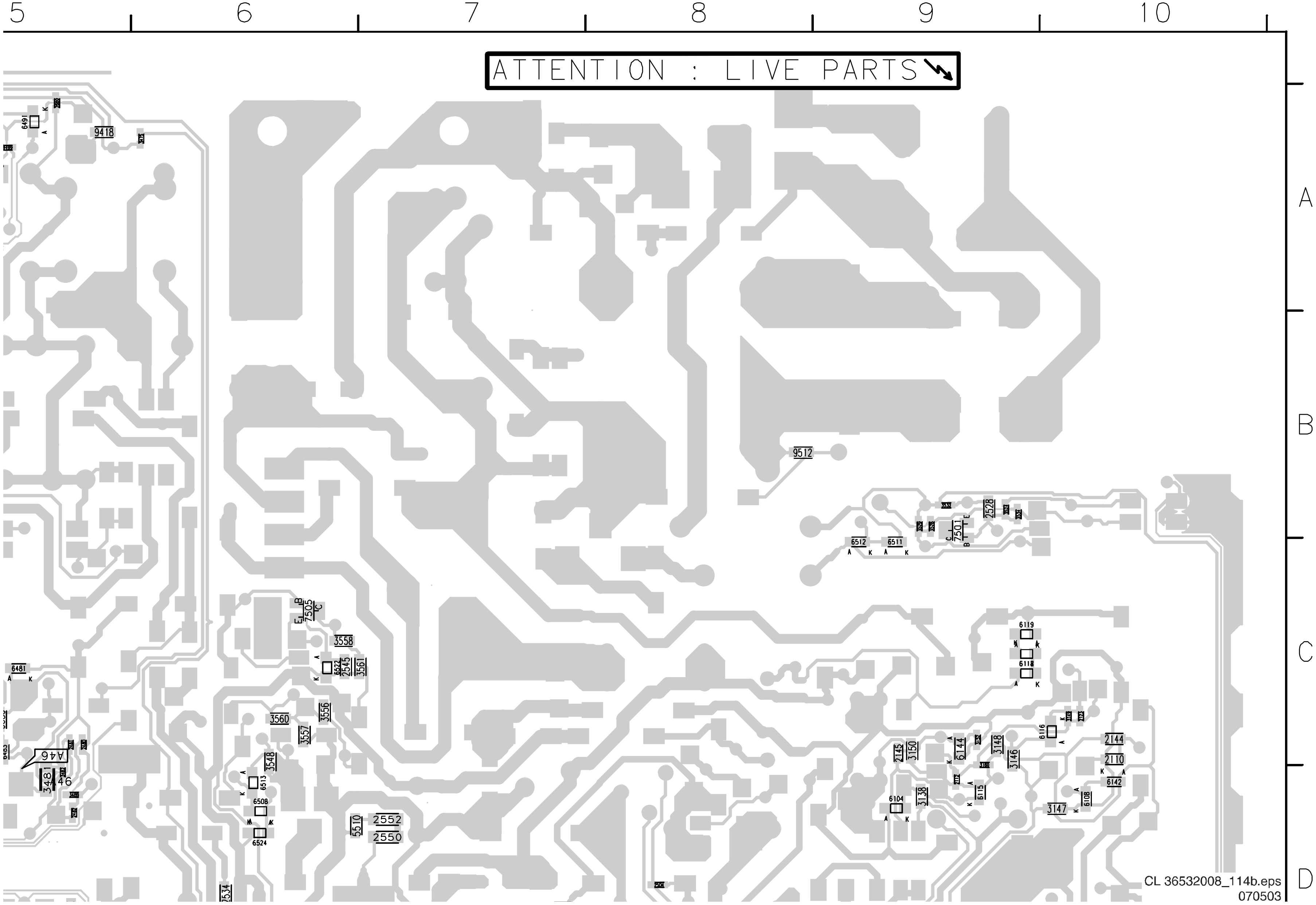
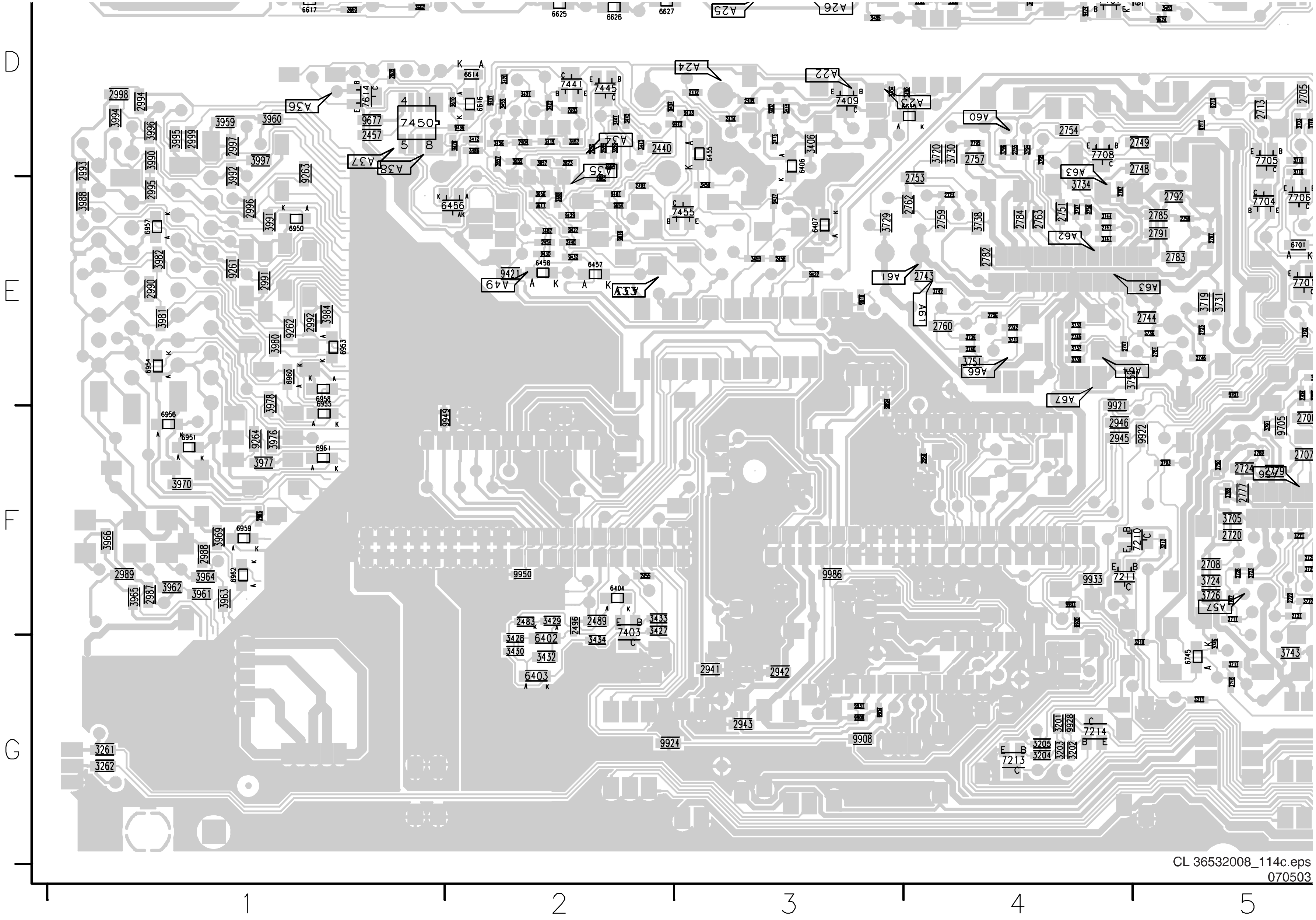
Layout Large Signal Panel (Part 2 Bottom Side)


5
6
7
8
9
10
A
B
C
D
ATTENTION : LIVE PARTS
9418
6491
9512
6512
6511
2528
7501
7505
3558
6522
2545
3561
6481
3560
3556
3557
3548
6513
6508
6524
A46
3481
5510
2552
2550
2534
6119
6118
6116
2144
2110
6142
3147
6108
3148
3146
6144
3150
2145
3138
6104
6115

CL 36532008_114b.eps
070503

Layout Large Signal Panel (Part 3 Bottom Side)


D
E
F
G
1
2
3
4
5
6617
6625
6626
6627
A25
A26
A24
A22
A23
A36
A37
A38
A34
A35
A33
A49
A60
A61
A62
A63
A65
A66
A67
A57
6614
7614
7441
7445
7409
7450
9677
2457
2440
6455
6406
3406
7455
6456
6458
6457
9421
6407
2998
2994
3994
3996
3995
2999
3959
3960
2997
3997
3992
9263
2993
3990
2995
3988
2996
3991
6950
6957
3982
9261
2991
2990
3981
2992
3984
9262
3980
6953
6954
6960
6958
6955
3978
6956
6951
9264
3976
6961
3977
3970
9949
3966
6959
3969
2988
6962
2989
3964
3962
3961
3965
2987
3963
9950
6404
2483
3429
2496
2489
3433
7403
3427
3428
6402
3434
3430
3432
6403
2941
2942
2943
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9986
9908
3261
3262
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2749
7708
2748
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2757
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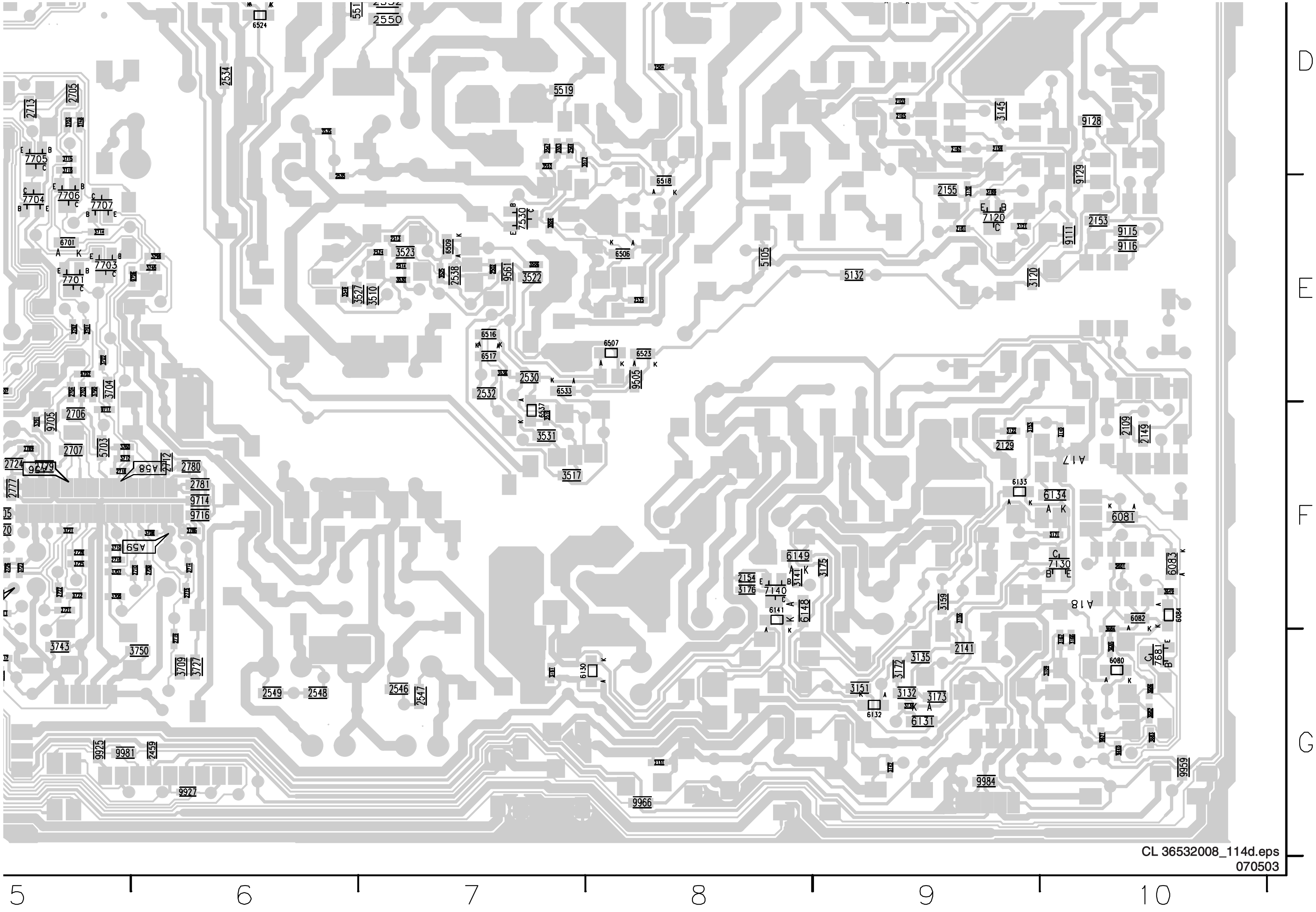
3730
2753
2762
2759
3738
2784
2763
2751
2792
2785
2791
2783
3729
2782
2743
2760
2744
3719
3731
3751
3752
9921
2946
2945
9932
2713
2705
7705
7704
7706
6701
9705
2707
2724
2777
3705
2720
2708
3724
3726
3743
6745
7210
7211
9933
3201
9928
7214
3205
3204
3203
3202
7213

CL 36532008_114c.eps
070503

Layout Large Signal Panel (Part 4 Bottom Side)


D
E
F
G
5
6
7
8
9
10
6524
2550
2534
5519
2713
2705
7705
7704
7706
7707
6701
7703
7701
3523
2538
9561
3522
3527
3510
6518
7530
6506
5105
5132
3145
9128
9129
2155
7120
9111
2153
9115
9116
3120
6516
6517
6507
6523
9505
2530
2532
6533
6537
3531
3517
3704
9705
2706
2707
5703
2724
2779
2777
A58
2712
2780
2781
9714
9716
A59
3743
3750
3709
3727
2549
2548
2546
2547
9925
9981
2459
9927
9966
6130
2109
2149
2129
A17
6133
6134
6081
7130
6083
6149
2154
3176
7140
3141
3175
6141
6148
3159
A18
6082
6084
2141
3135
3172
7681
6080
3151
3132
3173
6132
6131
9984
9959

CL 36532008_114d.eps
070503

Small Signal Board: Connector

0S01	G1
1S01	C6
1S02	I14
1S15	I2
2S01	F1
2S02	F1
2S03	F1
2S04	F2
2S05	F2
2S06	G13
2S07	G13
2S08	G14
2S09	G14
2S10	G7
2S11	G10
2S12	G5
2S13	F9
2S14	G10
2S15	G10
2S16	G11
2S17	G7
2S18	G7
2S19	G7
2S20	G7
2S21	G7
2S22	G8
2S23	G8
2S24	G8
2S25	G8
2S26	G4
2S27	G4
2S28	G5
2S29	G5
2S30	G5
2S31	G6
2S32	G6
2S33	G6
2S34	G6
2S35	G6
2S36	G6
2S37	G6
2S38	H2
2S39	H3
2S40	H3
2S41	H3
2S42	H3
2S43	G3
2S44	H4
2S45	G4
2S46	H4
3S01	F14
3S02	F13
3S03	F9
3S04	F10
3S05	G14
3S06	G13
3S07	F7
3S08	G5
3S09	G9
3S10	E9
5S01	F2
5S02	F2
5S03	F1
5S04	F1
5S05	F1
9S01	G3
9S02	G3
9S03	G3
9S04	G3
9S05	G3
9S06	G4
9S07	G4
9S08	G4
9S09	G4
9S10	G4
9S11	G5
9S12	F8
9S13	F11
9S14	F10
9S15	F11
9S16	G2
9S17	G5
9S18	G6
9S19	G6
9S20	G6
9S21	G6
9S22	G6
9S23	G6
9S24	G6
9S25	F7
9S26	F7
9S27	F7
9S28	F7
9S29	F7
9S30	F8
9S31	F8
9S65	E10
9S66	G10
9S67	G10
9S68	H10
9S69	H10
FS00	C7
FS01	C6
FS02	H5
FS03	H5
FS04	H6
FS05	H6
FS06	H6
FS07	I6
FS08	I6
FS09	I6
FS10	I6
FS11	I7
FS12	I7
FS13	I7
FS14	I7
FS15	I7
FS16	I7
FS17	I8
FS18	I8
FS20	I8
FS21	I8
FS22	I9
FS23	I9
FS24	I9
FS25	I9
FS26	I10
FS27	I10
FS28	I10
FS29	I11
FS30	I11
FS31	I11
FS32	I11
FS33	I12
FS34	I12
FS35	I12
FS36	I12
FS37	I12
FS38	I13
FS39	I12
FS40	I13
FS42	I13
FS43	I13
FS44	I13
FS45	I14
FS46	I14
FS47	C7
FS48	C7
FS49	E9
FS50	E9
FS51	I5
FS52	H8
FS53	I9
FS54	I9
VS11	H5
VS12	H6
VS13	H6
VS14	H6
VS15	H6
VS16	H6
VS17	H6
VS18	H6
VS19	H7
VS20	H7
VS21	H7
VS22	H7
VS23	H7
VS24	H7
VS25	H8
VS26	H8
VS28	H8
VS31	H9
VS32	H9
VS33	H9
VS34	H10
VS35	H10
VS41	H11
VS43	H11
VS44	H11
VS45	H11
VS46	H12
VS47	H12
VS48	H12
VS49	H12
VS52	H12
VS53	H13
VS54	H13
VS55	H13
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VS57	H13
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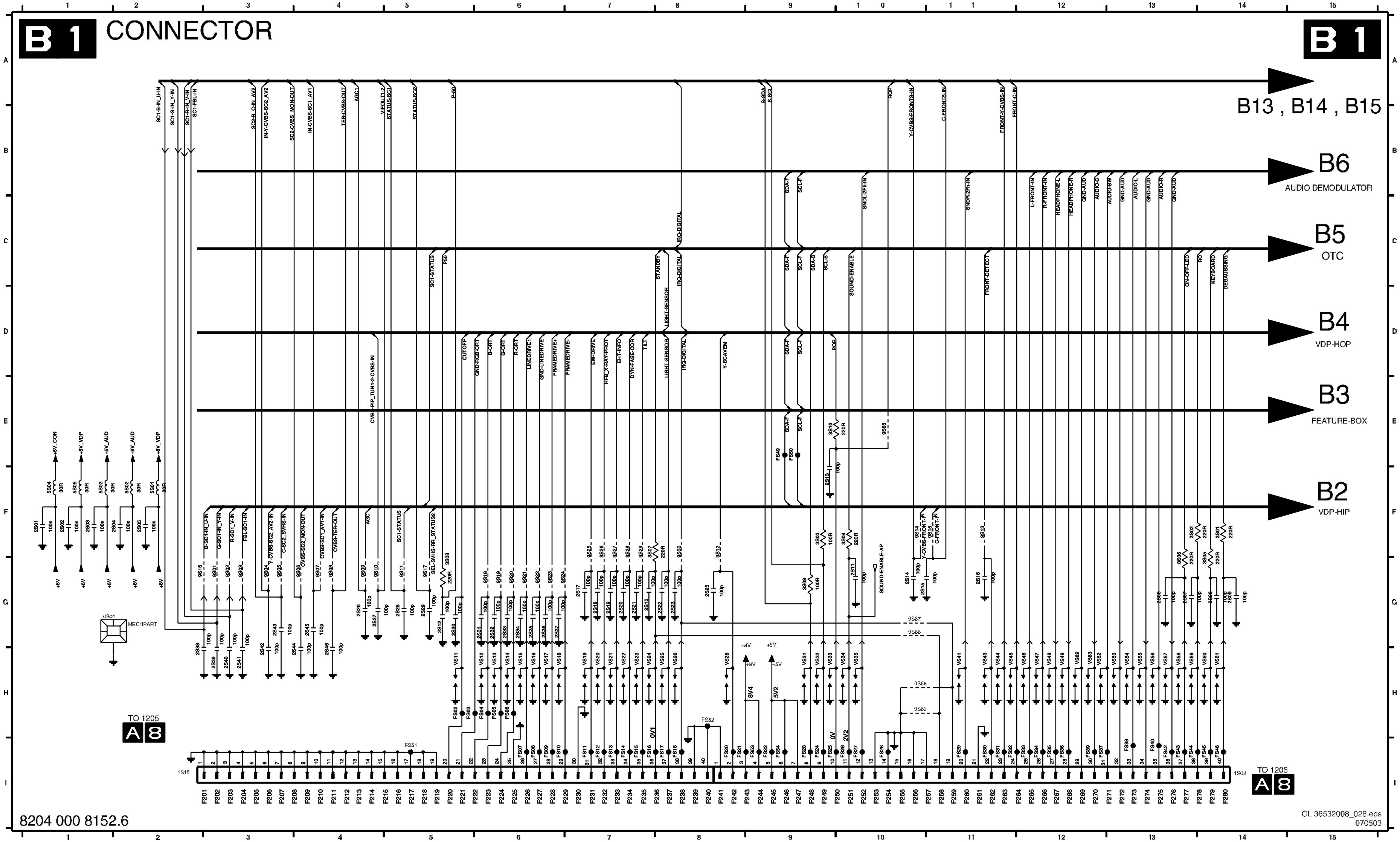
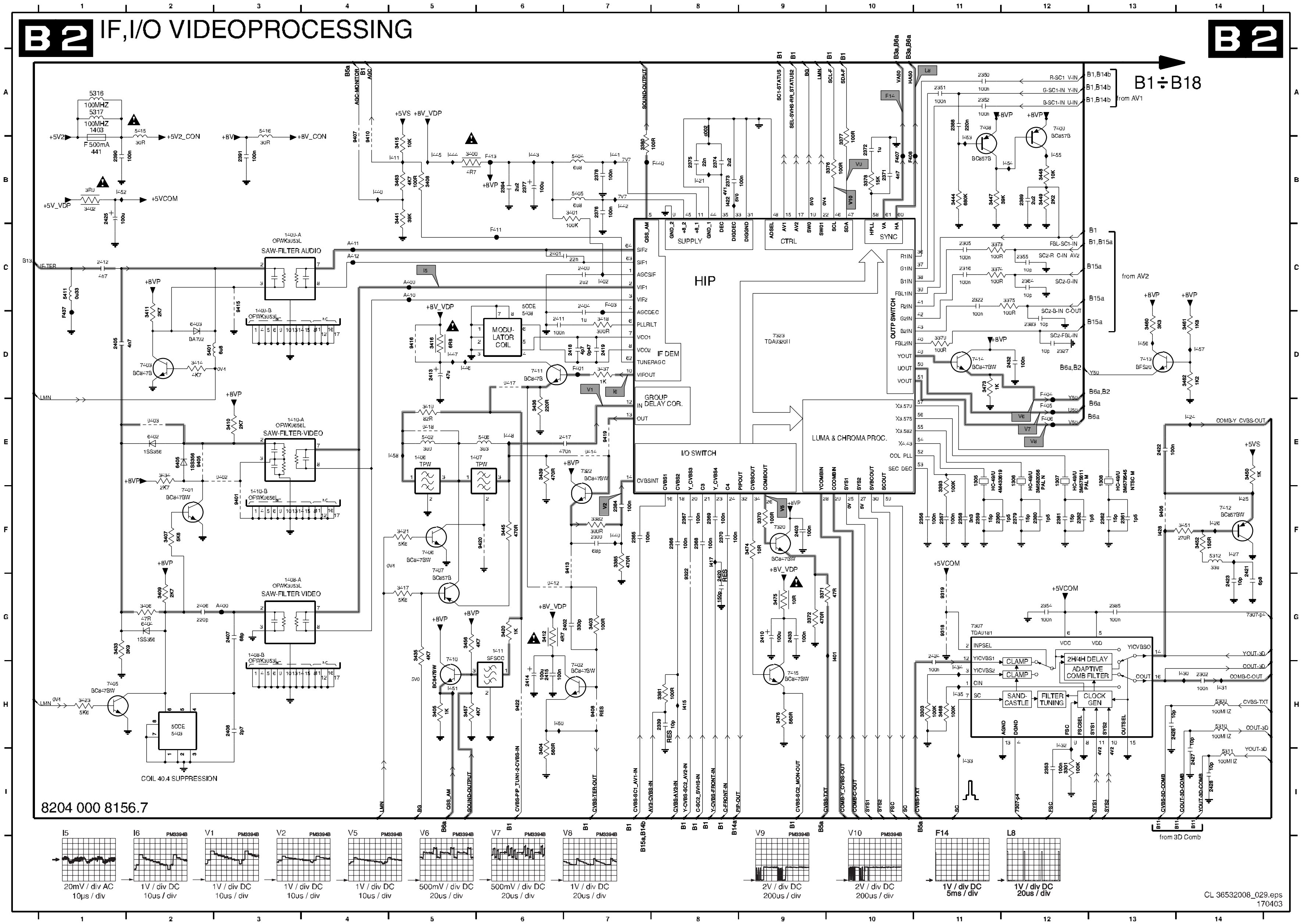
VS59	H13
VS60	H14
VS61	H14
VS62	H12
VS63	H12


B 1
CONNECTOR
B 1
B13 , B14 , B15
B6
AUDIO DEMODULATOR
B5
OTC
B4
VDP-HOP
B3
FEATURE-BOX
B2
VDP-HIP
SC1-B-IN_U-IN
SC1-G-IN_Y-IN
SC1-R-IN_V-IN
SC1-FBL-IN
SC2-R_C-IN_AV2
IN-Y-CVBS-SC2_AV2
SC2-CVBS_MON-OUT
IN-CVBS-SC1_AV1
TER-CVBS-OUT
AGC1
STATUS-SC1
STATUS-SC2
P-50
S-SDA
S-SCL
ROP
Y-CVBS-FRONT-IN
C-FRONT-IN
FRONT-Y-CVBS-IN
FRONT-C-IN
SDA-F
SCL-F
SNDL-2R-IN
L-FRONT-IN
R-FRONT-IN
HEADPHONE-L
HEADPHONE-R
AUDIO-C
AUDIO-SW
AUDIO-L
AUDIO-R
GND-AUD
IRQ-DIGITAL
SC1-STATUS
P50
STANDBY
LIGHT-SENSOR
SDA-S
SCL-S
SOUND-ENABLE
FRONT-DETECT
ON-OFF-LED
RC
KEYBOARD
DEGAUSSING
CVBS-PIP_TUN1-2-CVBS-IN
CUTOFF
GND-RGB-CRT
B-CRT
G-CRT
R-CRT
LINEDRIVE1
GND-LINEDRIVE
FRAMEDRIVE+
FRAMEDRIVE-
EW-DRIVE
HFB_X-RAY-PROT
EHT-INFO
DYN-FASE-COR
TILT
Y-SCAVEM
POR
SOUND-ENABLE-AP
MECHPART
0S01
+5V_CON
+5V_VDP
+5V_AUD
+8V_AUD
+8V_VDP
TO 1205
A8
TO 1206
A8
1S15
1S02
FS51
FS52
8V4
5V2
0V1
0V
2V2
+8V
+5V
F201
F280
8204 000 8152.6
CL 36532008_028.eps
070503

Small Signal Board: IF, I/O Video Processing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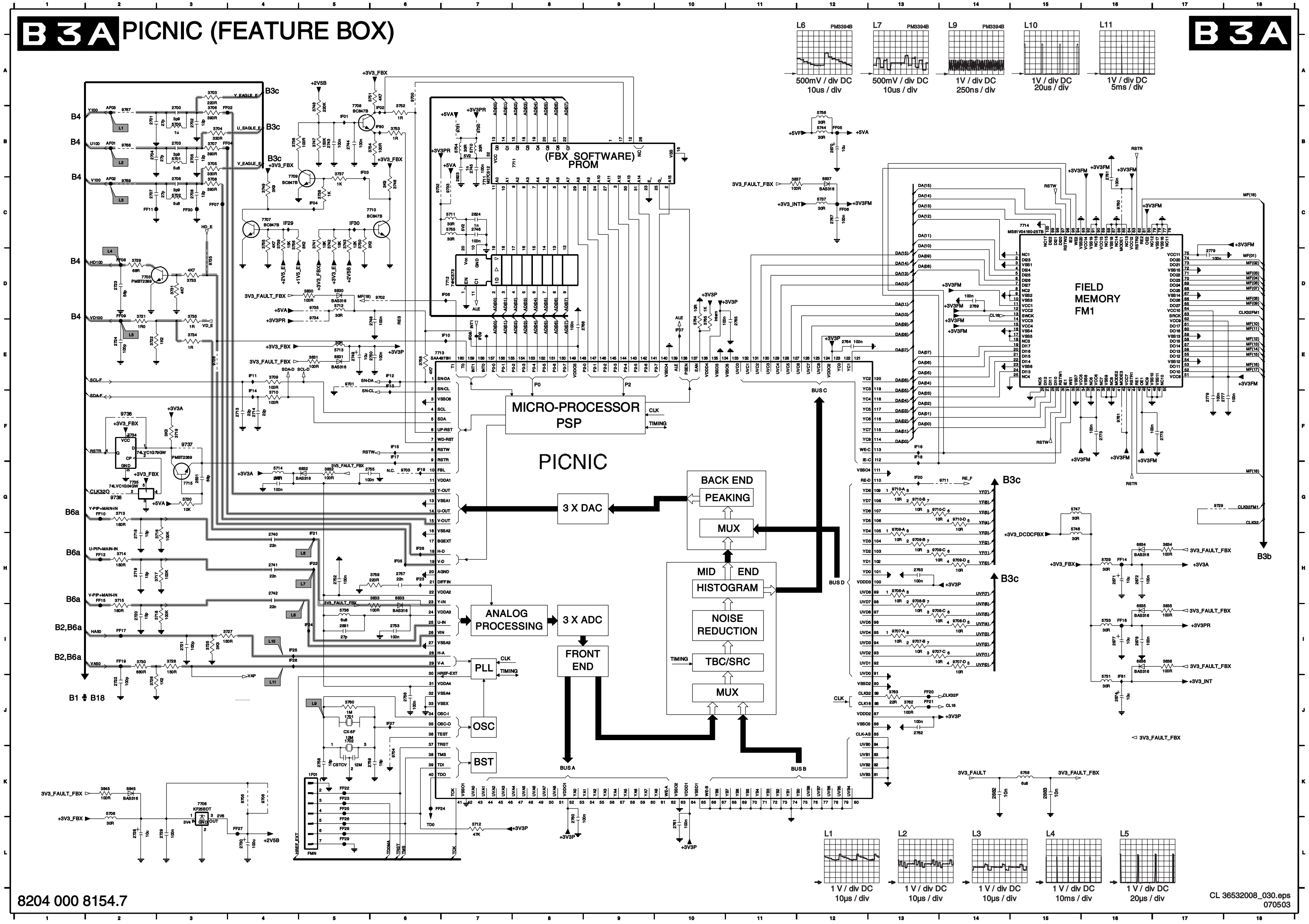
IF,I/O VIDEOPROCESSING
B2
B1÷B18
from AV1
from AV2
HIP
7323
TDA9320H
SUPPLY
CTRL
SYNC
IF DEM
GROUP DELAY COR.
I/O SWITCH
LUMA & CHROMA PROC.
OUTP SWITCH
SAW-FILTER AUDIO
SAW-FILTER-VIDEO
SAW-FILTER VIDEO
MODU-LATOR COIL
COIL 40.4 SUPPRESSION
7307
TDA9181
CLAMP
CLAMP
2H/4H DELAY
ADAPTIVE COMB FILTER
SAND-CASTLE
FILTER TUNING
CLOCK GEN
from 3D Comb
8204 000 8156.7
I5
20mV / div AC
10µs / div
I6
1V / div DC
10us / div
V1
1V / div DC
10us / div
V2
1V / div DC
10us / div
V5
1V / div DC
10us / div
V6
500mV / div DC
20us / div
V7
500mV / div DC
20us / div
V8
1V / div DC
20us / div
V9
2V / div DC
200us / div
V10
2V / div DC
200us / div
F14
1V / div DC
5ms / div
L8
1V / div DC
20us / div
CL 36532008_029.eps
170403

1305	E11
1306	E12
1307	E12
1308	E13
1403	A1
1406	E5
1407	E5
1408-A	G3
1408-B	G3
1409-A	C3
1409-B	D3
1410-A	E4
1410-B	F3
1411	G6
2302	H14
2305	C11
2316	C11
2322	C11
2327	D12
2339	H8
2350	A11
2351	A11
2352	A11
2353	I12
2354	G12
2355	C12
2356	F11
2357	F11
2358	F11
2359	F11
2360	F11
2361	F13
2362	F13
2364	C12
2365	F7
2366	F8
2367	F8
2368	F8
2369	F8
2370	F8
2371	B10
2372	B10
2373	B8
2374	B8
2375	B8
2376	B7
2377	B6
2378	B7
2379	F12
2380	F12
2381	F12
2382	F12
2383	D12
2384	F7
2385	G13
2388	A11
2389	B12
2390	B1
2391	B3
2394	B6
2399	F7
2401	C6
2402	G7
2403	F9
2404	C7
2405	D1
2406	G2
2407	G3
2408	H3
2409	C7
2410	G9
2411	D6
2412	C1
2413	D5
2414	H6
2415	H6
2417	E7
2418	D7
2419	D7
2420	G8
2421	F14
2422	E13
2423	G14
2424	G11
2425	B1
2426	H13
2427	I14
2428	I14
2432	D12
2433	G9
3301	I12
3303	H11
3370	F9
3371	G9
3372	G9
3373	C11
3374	C11
3375	C12
3376	B10
3377	B10
3378	B10
3379	D11
3380	B7
3381	H8
3382	F7
3385	F7
3393	F11
3400	B5
3401	B7
3402	B1
3403	G7
3404	I6
3405	H5
3406	G2
3407	F2
3408	B5
3409	G2
3410	E3
3411	D2
3412	G6
3414	D2
3415	B5
3416	D5
3417	G5
3418	D7
3419	E5
3420	G6
3421	F5
3423	H1
3433	G1
3434	E2
3435	G5
3436	E6
3437	D7
3439	E6
3441	B5
3444	B11
3445	F6
3447	B11
3448	B12
3449	B12
3450	E14
3451	F14
3452	F14
3456	G5
3457	H5
3460	D13
3461	D14
3462	D14
3463	B5
3468	H11
3473	D11
3474	F9
3475	G9
3476	H9
5309	H14
5310	H14
5311	I14
5312	F14
5316	A1
5317	A1
5401	D2
5402	E5
5403	H2
5404	B7
5405	B7
5406	E6
5408	D6
5411	C1
5415	A2
5416	A3
6402	E2
6403	D2
6404	G2
6405	E2
7307	G11
7320	F9
7322	E7
7323	D9
7401	F2
7402	H7
7403	D2
7405	H1
7406	F5
7407	F5
7408	A11
7409	A12
7410	H5
7411	D6
7412	F14
7413	D13
7414	D11
7415	H9
9318	G11
9319	G11
9322	G8
9401	F3
9402	E3
9403	E2
9405	E2
9406	F13
9407	B4
9408	H7
9410	B4
9412	G6
9413	F7
9414	E7
9415	C3
9416	D5
9417	D6
9418	E5
9419	E7
9420	F6
9422	H6
A400	G3
A409	C5
A410	C5
A411	C4
A412	C4
F401	D7
F403	C7
F404	D12
F405	E12
F406	E12
F407	B10
F408	B10
F411	C6
F413	B6
F437	D1
F440	B8
I401	G10
I402	C7
I411	B5
I415	H8
I417	F8
I421	B8
I422	B8
I424	E14
I425	F14
I426	F14
I427	F14
I428	F13
I430	H14
I431	H14
I432	H12
I433	I11
I434	H11
I435	H11
I440	B4
I441	B7
I442	B7
I443	B6
I444	B5
I445	B5
I446	D5
I447	D5
I448	E6
I449	F7
I450	H6
I451	H5
I452	B1
I453	B11
I454	B12
I455	B12
I456	D13
I457	D14
I458	E5
c002	A8

Small Signal Board: PICNIC (Feature Box)


B3A
PICNIC (FEATURE BOX)
B3A
L6 PM3394B
500mV / div DC
10us / div
L7 PM3394B
500mV / div DC
10us / div
L9 PM3394B
1V / div DC
250ns / div
L10
1V / div DC
20us / div
L11
1V / div DC
5ms / div
(FBX SOFTWARE) PROM
FIELD MEMORY FM1
MICRO-PROCESSOR PSP
PICNIC
BACK END
PEAKING
MUX
3 X DAC
MID END
HISTOGRAM
NOISE REDUCTION
TBC/SRC
MUX
ANALOG PROCESSING
3 X ADC
FRONT END
PLL
OSC
BST
BUS A
BUS B
BUS C
BUS D
B3c
B3b
B4
B6a
B2,B6a
B1 B18
+3V3_FBX
+2V5B
+5VA
+3V3PR
+3V3P
+3V3FM
+3V3A
3V3_FAULT_FBX
3V3_FAULT
L1
1 V / div DC
10μs / div
L2
1 V / div DC
10μs / div
L3
1 V / div DC
10μs / div
L4
1 V / div DC
10ms / div
L5
1 V / div DC
20μs / div

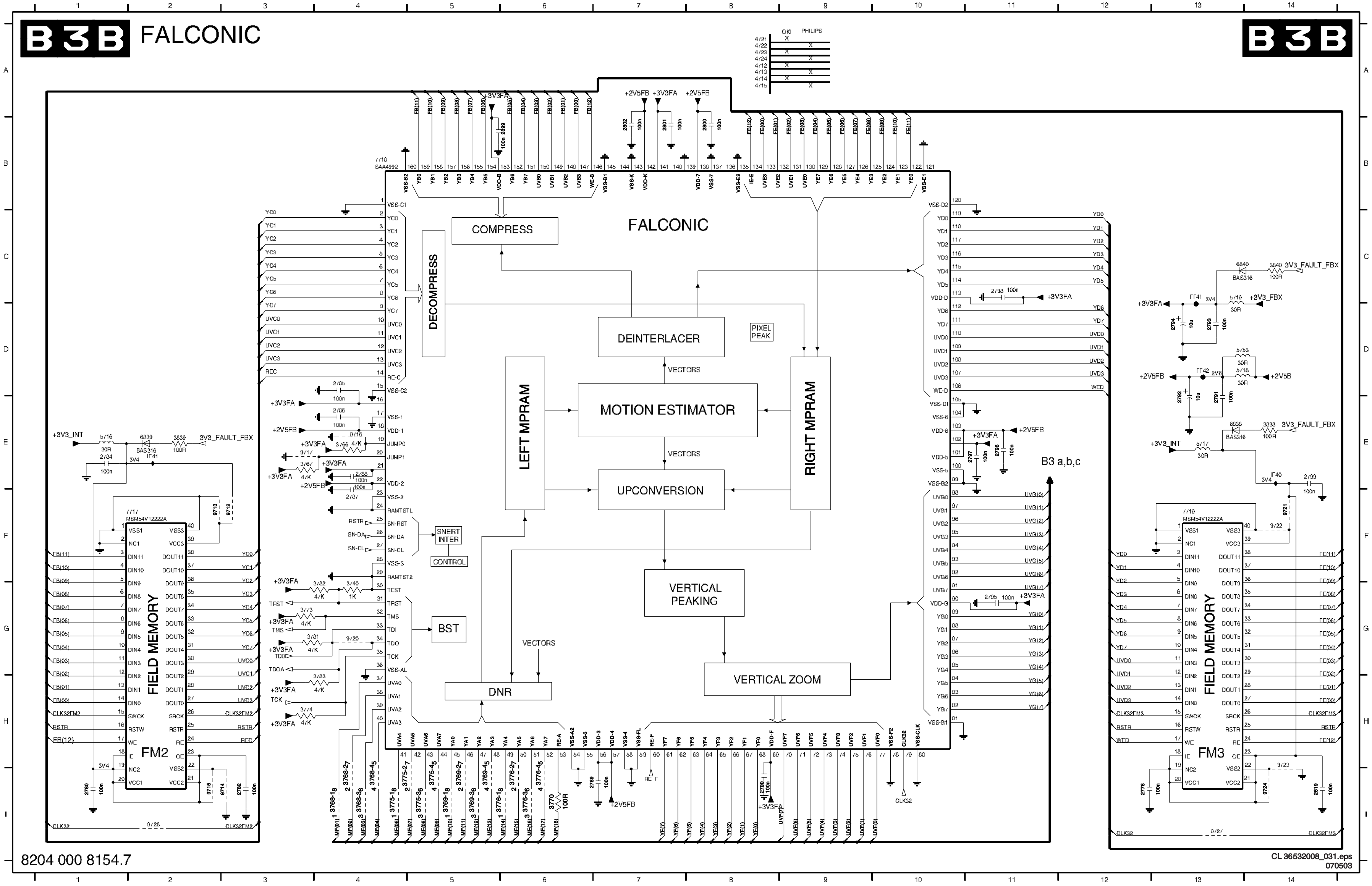
8204 000 8154.7

CL 36532008_030.eps
070503

1701	J5
1702	J5
1F01	K5
2700	B3
2701	B2
2702	B3
2703	B3
2704	B2
2705	B3
2706	C3
2707	C2
2708	C3
2713	F4
2714	F4
2718	H2
2719	H2
2720	I2
2721	I3
2722	J2
2723	D2
2724	E2
2728	L2
2729	L3
2730	L4
2740	H4
2741	H4
2742	H4
2743	B5
2744	B5
2745	B7
2746	C7
2748	E6
2749	E5
2750	E6
2751	G4
2752	H5
2753	I6
2755	G6
2756	J6
2757	H6
2758	K5
2759	K6
2760	L8
2761	L10
2762	J13
2763	H13
2764	E12
2765	E11
2766	E8
2767	C12
2769	D14
2773	F16
2775	F17
2777	F18
2778	F17
2779	D17
2781	B16
2823	C7
2824	C7
2831	G3
2870	B12
2871	H16
2872	H16
2874	J16
2877	I16
2878	I16
2881	I5
2882	K14
2883	K15
3703	A3
3704	B3
3705	B3
3706	B3
3707	B3
3708	C3
3709	E4
3710	F4
3712	L7
3713	G2
3714	H2
3715	H2
3716	H3
3717	H3
3718	I3
3719	F3
3720	G3
3721	D2
3722	E2
3725	I3
3726	J2
3727	I4
3728	I3
3729	D2
3730	I2
3731	D3
3733	D3
3734	E3
3735	D3
3736	B4
3737	B5
3738	C5
3739	C4
3741	C5
3742	C5
3743	C5
3746	C6
3747	B5
3748	B5
3749	C4
3750	C5
3751	A6
3752	B6
3753	B6
3754	B6
3755	C4
3756	C4
3758	E6
3759	H6
3760	J5
3762	J13
3763	J13
3764	E10
3765	E10
3830	D5
3831	E5
3832	G5
3833	H6
3834	H17
3835	I17
3836	I17
3837	C11
3845	K2
5700	B3
5701	B3
5702	C3
5706	K2
5710	B7
5711	C7
5712	D5
5713	E5
5714	G4
5729	H16
5731	J16
5733	I16
5736	I5
5737	C12
5744	B12
5746	G15
5747	G15
5754	B7
5755	C7
5756	B12
5759	K15
6830	D5
6831	E5
6832	G5
6833	H6
6834	H16
6835	I16
6836	I16
6837	C12
6845	K2
7703	D2
7706	K3
7707	C4
7708	B5
7709	C4
7710	C5
7711	B8
7712	D7
7713	E6
7714	C15
7715	G3
7734	F2
7735	G2
9700	A6
9701	E5
9702	D6
9703	G6
9704	K6
9705	K4
9706	K4
9707-A	I13
9707-B	I13
9707-C	I14
9707-D	I14
9708-A	H13
9708-B	H13
9708-C	I14
9708-D	I14
9709-A	G13
9709-B	H13
9709-C	H14
9709-D	H14
9710-A	G13
9710-B	G13
9710-C	G14
9710-D	G14
9711	G14
9725	D3
9726	E3
9729	G17
9730	B7
9731	B7
9732	C6
9733	C7
9734	E5
9735	D5
9736	F2
9737	F3
9738	G2
9760	C16
9761	F16
9767	B2
9768	B2
9769	C2
AF01	B2
AF02	C2
AF03	B2
FF02	B4
FF04	B4
FF05	B12
FF06	C12
FF07	C3
FF08	D2
FF09	D2
FF10	G2
FF11	C2
FF12	H2
FF14	H16
FF15	H2
FF16	I16
FF17	I2
FF19	I2
FF20	J13
FF21	J13
FF22	K5
FF23	K5
FF24	K6
FF25	K5
FF26	L5
FF27	L4
FF28	L5
FF29	L5
FF30	C3
IF01	B5
IF02	B6
IF03	B5
IF04	C5
IF05	H6
IF06	D7
IF07	E10
IF08	E7
IF09	E7
IF10	E7
IF11	E4
IF12	E6
IF13	E6
IF14	F4
IF15	F6
IF16	F13
IF17	F6
IF18	F13
IF19	G6
IF20	G13
IF21	H5
IF22	H5
IF23	H6
IF24	I5
IF25	I4
IF26	I4
IF27	J6
IF28	H6
IF29	C4
IF30	C5
IF80	B6
IF81	J16

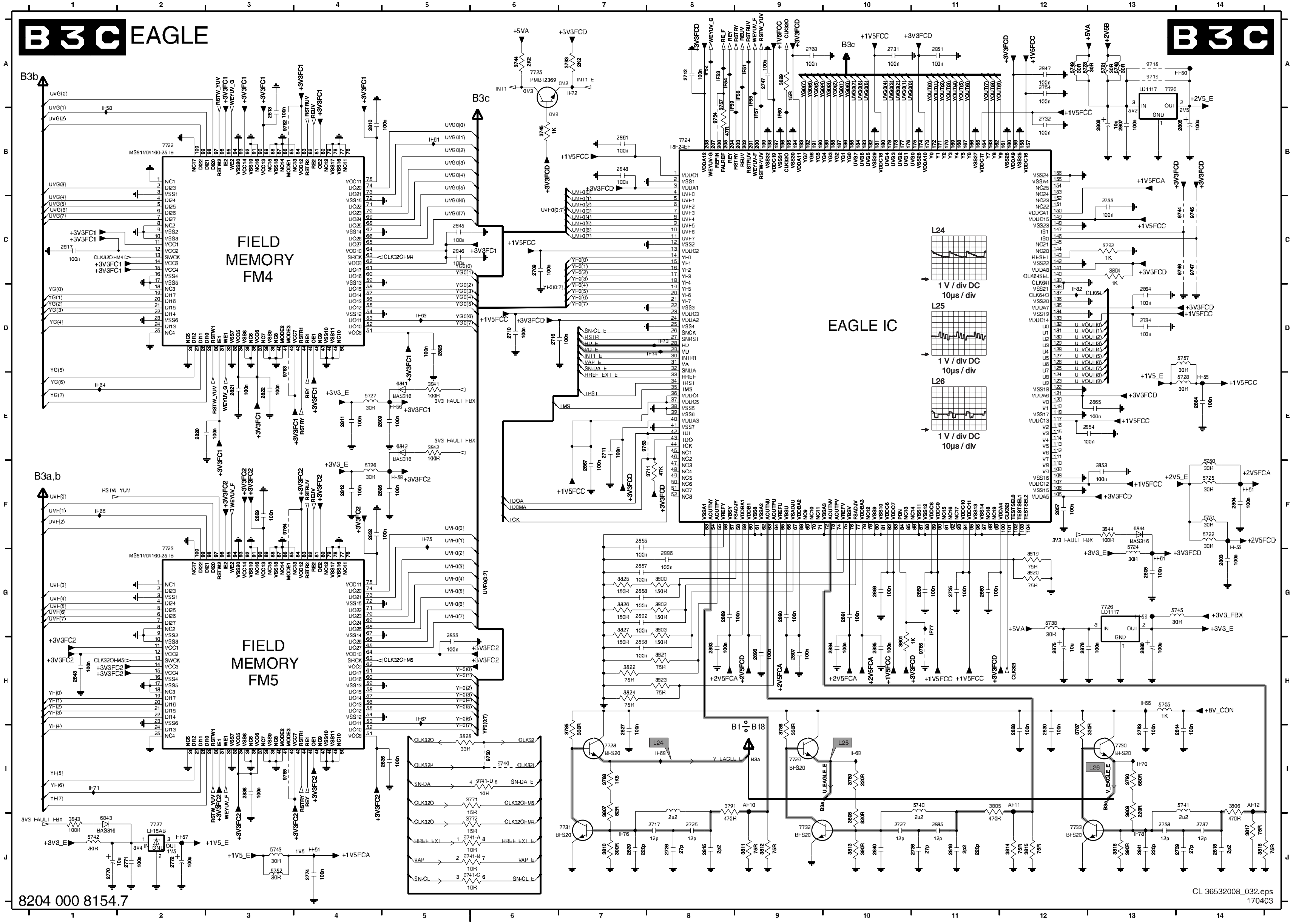
Small Signal Board: Diversity Tables

Small Signal Board: Falconic


B3B
FALCONIC
B3B
FALCONIC
COMPRESS
DECOMPRESS
DEINTERLACER
PIXEL PEAK
LEFT MPRAM
MOTION ESTIMATOR
RIGHT MPRAM
VECTORS
UPCONVERSION
VERTICAL PEAKING
VERTICAL ZOOM
DNR
SNERT INTER
CONTROL
BST
SAA4992
OKI
PHILIPS
FIELD MEMORY
FM2
FM3
MSM54V12222A
B3 a,b,c
+3V3FA
+2V5FB
+3V3_INT
3V3_FAULT_FBX
+3V3_FBX
+2V5B
BAS316
CLK32
8204 000 8154.7
CL 36532008_031.eps
070503

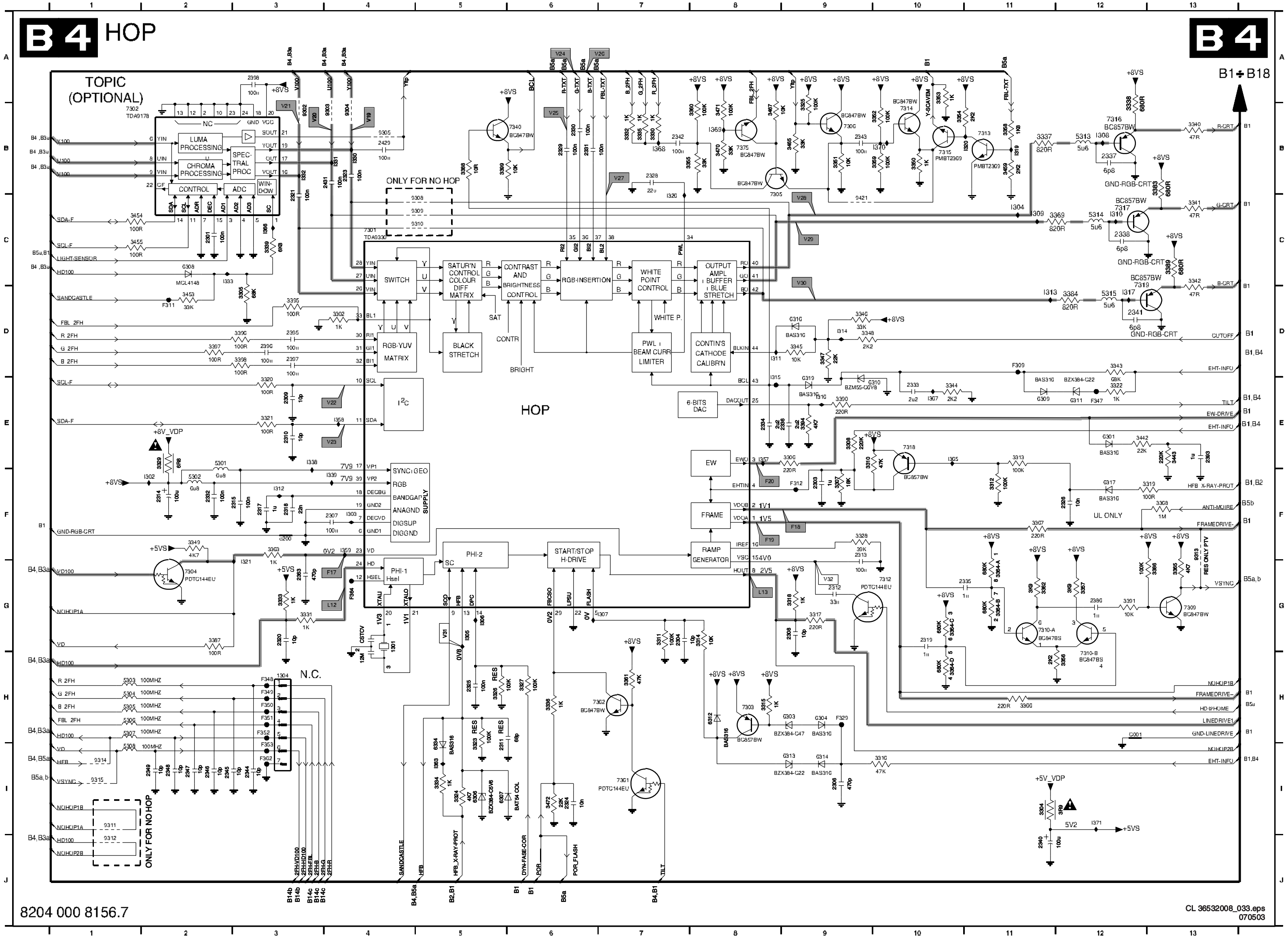
2776	I12
2780	I1
2782	I3
2784	E1
2785	D4
2786	E4
2787	F4
2788	E4
2789	I6
2790	I8
2791	E13
2792	E13
2793	D13
2794	D13
2795	G11
2796	E11
2797	E11
2798	C11
2799	E14
2800	B8
2801	B7
2802	B7
2819	I14
2899	B6
3740	G4
3766	E4
3767	E3
3768-A	I4
3768-B	I4
3768-C	I4
3768-D	I4
3769-A	I5
3769-B	I5
3769-C	I5
3769-D	I5
3770	I6
3773	G3
3774	H3
3775-A	I4
3775-B	I4
3775-C	I5
3775-D	I5
3776-A	I6
3776-B	I6
3776-C	I6
3776-D	I6
3781	G3
3782	G4
3783	H4
3838	E14
3839	E2
3840	C14
5716	E1
5717	E13
5718	D13
5719	C13
5753	D13
6838	E13
6839	E2
6840	C13
7717	F1
7718	B4
7719	F13
9712	F3
9713	F2
9714	I3
9715	I2
9716	E4
9717	E3
9720	G4
9721	F14
9722	F14
9723	H14
9724	I14
9727	I13
9728	I2
FF41	C13
FF42	D13
IF40	E14
IF41	E2

Small Signal Board: Eagle



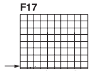
2709	C6
2710	D6
2711	E7
2712	A8
2716	D6
2717	J8
2725	J8
2726	J8
2727	J10
2731	A10
2732	B12
2733	C13
2734	D13
2735	G11
2736	J11
2737	J14
2738	J13
2739	J14
2747	A9
2754	A12
2768	A9
2770	J1
2771	J2
2772	J2
2774	J4
2783	I13
2803	G14
2804	F14
2805	G13
2806	B14
2807	B13
2808	B13
2809	E4
2810	B4
2811	E4
2812	F4
2813	B3
2814	I14
2815	J8
2816	J11
2817	C1
2818	J14
2820	E2
2821	E3
2822	E3
2825	D5
2826	F4
2827	I7
2828	I12
2829	F3
2830	I12
2832	F4
2833	H5
2835	I5
2838	I3
2839	J7
2840	J10
2841	J13
2843	H1
2845	C5
2846	C5
2847	A12
2848	B7
2851	A11
2853	F13
2854	E13
2855	F7
2857	F12
2859	G11
2860	G11
2861	B7
2864	D13
2865	E13
2866	G10
2867	F7
2875	H12
2876	H12
2880	H13
2884	E14
2885	J11
2886	G8
2887	G7
2888	G7
2889	G8
2890	G9
2891	G10
2892	G7
2893	H8
2894	H10
2895	H10
2896	H9
2897	H9
2898	H7
3711	F8
3744	A6
3745	B6
3757	A8
3771	I6
3772	J6
3785	I7
3786	I9
3787	I12
3788	I7
3789	I10
3790	I13
3791	I8
3792	C13
3793	A7
3800	G8
3801	H10
3802	G8
3803	G8
3804	C13
3805	I11
3806	I14
3807	I7
3808	J10
3809	I13
3810	J7
3811	J9
3812	J9
3813	J10
3814	J12
3815	J12
3816	J13
3817	J14
3818	J14
3819	G12
3820	G12
3821	H8
3822	H7
3823	H8
3824	H7
3825	G7
3826	G7
3827	G7
3828	I5
3829	A9
3841	E5
3842	E5
3843	J1
3844	F13
5705	H13
5721	A13
5722	F14
5723	A12
5724	G13
5725	F14
5726	F4
5727	E4
5728	E14
5738	G12
5739	I8
5740	I11
5741	I14
5742	J1
5743	J3
5745	G14
5748	A13
5749	A12
5750	F14
5751	F14
5752	J3
5757	D14
6841	E5
6842	E5
6843	J1
6844	F13
7720	A13
7722	B2
7723	G2
7724	B8
7725	A6
7726	G13
7727	J2
7728	I7
7729	I9
7730	I13
7731	J7
7732	J9
7733	J12
9718	A13
9719	A13
9740	I6
9741-A	J6
9741-B	J6
9741-C	J6
9741-D	I6
9744	C14
9745	C14
9746	C14
9747	C14
9750	I6
9753	E7
9754	B8
9762	B3
9763	D3
9764	F3
9765	I3
9766	H11
AF10	I9
AF11	I12
AF12	I14
FF50	A14
FF51	F14
FF53	G14
FF54	J4
FF55	E14
FF56	E5
FF57	J2
FF58	F5
FF59	G13
FF61	G13
IF51	A9
IF52	A8
IF53	A8
IF54	A8
IF55	A9
IF56	A9
IF57	B9
IF58	B1
IF59	A8
IF60	B9
IF61	B5
IF63	D5
IF64	E1
IF65	F1
IF66	H13
IF67	H5
IF68	I8
IF69	I10
IF70	I13
IF71	I1
IF72	A7
IF73	D8
IF74	D8
IF75	F5
IF76	J7
IF77	G11
IF78	J13
IF82	D12

Small Signal Board: HOP

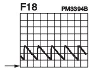

B4
HOP
B4
B1÷B18
TOPIC
(OPTIONAL)
7302
TDA9178
LUMA PROCESSING
CHROMA PROCESSING
SPEC-TRAL PROC
CONTROL
ADC
WIN-DOW
ONLY FOR NO HOP
7301
TDA9330
SWITCH
SATUR'N CONTROL COLOUR DIFF MATRIX
CONTRAST AND BRIGHTNESS CONTROL
RGB-INSERTION
WHITE POINT CONTROL
OUTPUT AMPL / BUFFER / BLUE STRETCH
RGB-YUV MATRIX
BLACK STRETCH
PWL / BEAM CURR LIMITER
CONTIN'S CATHODE CALIBR'N
I2C
HOP
6-BITS DAC
SYNC / GEO
RGB
BANDGAP
ANAGND
DIGSUP
DIGGND
SUPPLY
EW
FRAME
RAMP GENERATOR
PHI-1 Hsel
PHI-2
START/STOP H-DRIVE
N.C.
ONLY FOR NO HOP
UL ONLY
RES ONLY PTV
R-CRT
G-CRT
B-CRT
CUTOFF
EHT-INFO
TILT
EW-DRIVE
HFB_X-RAY-PROT
ANTI-MOIRE
FRAMEDRIVE-
VSYNC
FRAMEDRIVE+
LINEDRIVE1
GND-LINEDRIVE
SANDCASTLE
SDA-F
SCL-F
LIGHT-SENSOR
GND-RGB-CRT
8204 000 8156.7
CL 36532008_033.eps
070503

1301 G4	3344 E10	7316 B12
1304 H3	3345 D9	7317 C12
2301 C2	3346 D9	7318 E10
2303 F9	3347 D9	7319 C12
2304 G7	3348 D9	7340 B6
2306 I9	3349 F2	7361 I7
2307 F4	3350 B10	7362 H7
2308 G9	3351 B9	7375 B8
2309 E3	3352 B10	9302 B3
2310 E3	3353 A10	9303 B4
2311 I5	3354 B10	9304 B4
2312 G9	3355 B7	9305 B4
2313 F9	3356 H12	9308 C5
2314 F2	3357 G12	9309 C5
2315 F3	3358 B11	9310 C5
2317 F3	3359 B10	9311 I1
2318 F3	3360 B8	9312 J1
2319 G10	3361 H7	9313 F13
2320 G3	3362 G11	9314 I1
2321 C3	3363 F3	9315 I1
2323 B4	3364-A G11	9421 C9
2324 I6	3364-B G11	C001 H12
2325 H5	3364-C G10	F309 D11
2326 F12	3364-D H10	F311 D2
2328 B7	3365 G13	F312 F9
2329 B6	3366 H11	F329 H9
2330 B6	3367 F11	F347 E12
2331 B6	3368 F13	F348 H3
2332 F2	3369 C12	F349 H3
2333 E10	3383 B13	F350 H3
2334 E8	3384 D12	F351 H3
2335 G11	3386 G13	F352 H3
2336 E9	3387 G2	F353 I3
2337 B12	3388 B5	F362 I3
2338 C12	3389 C13	F364 G4
2340 J11	3390 E9	I302 F2
2341 D12	3391 G12	I303 F4
2342 B7	3394 E9	I304 B12
2343 B9	3395 D3	I305 G5
2344 I3	3396 D3	I306 G5
2345 I2	3397 D2	I307 G7
2346 I2	3398 D3	I308 B12
2347 I2	3399 B5	I309 C12
2348 I2	3442 E12	I310 C12
2349 I2	3443 E13	I311 D8
2363 G3	3453 D2	I312 F3
2386 G12	3454 C1	I313 D12
2393 E13	3455 C1	I314 D9
2395 D3	3459 B11	I315 D8
2396 D3	3465 B9	I316 E9
2397 D3	3467 B8	I317 D12
2398 A3	3470 B8	I319 B11
2429 B4	3471 B8	I320 B11
2431 B4	3472 I6	I321 G3
3302 D4	5301 E2	I326 C7
3304 I11	5302 F2	I330 B4
3305 D3	5303 H1	I331 B4
3306 E9	5304 H1	I332 B3
3307 F9	5305 H1	I333 C2
3308 E9	5306 H1	I338 E3
3310 E9	5307 H1	I339 F4
3311 G7	5308 I1	I357 E8
3312 F11	5313 B12	I358 E4
3313 E11	5314 C12	I359 F4
3314 G8	5315 D12	I363 I5
3315 H8	6301 E12	I365 E10
3316 I10	6303 H9	I366 C3
3317 G9	6304 H9	I367 E10
3318 G9	6306 I5	I368 B7
3319 F13	6307 I5	I369 B8
3320 E3	6308 C2	I370 B10
3321 E3	6309 E11	I371 I12
3322 E12	6310 E10	c200 F3
3323 I5	6311 E12	
3324 I5	6312 H8	
3325 B9	6313 I9	
3326 H5	6314 I9	
3327 H6	6316 D9	
3328 F9	6317 F12	
3329 E2	6319 E9	
3330 B7	6334 I5	
3331 G3	7301 C4	
3332 B7	7302 B1	
3333 G3	7303 H8	
3334 I5	7304 G2	
3335 B7	7305 C9	
3336 H6	7306 B9	
3337 B11	7309 G13	
3338 B12	7310-A G11	
3339 C3	7310-B H12	
3340 B13	7312 G10	
3341 C13	7313 B11	
3342 C13	7314 B10	
3343 D12	7315 B10	

F17

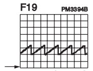

1V / div DC
5ms / div

F18



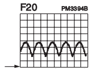
500mV / div DC
5ms / div

F19



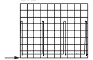
500mV / div DC
5ms / div

F20

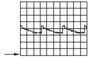


500mV / div DC
5ms / div

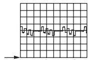
L12


1V / div DC
10us / div

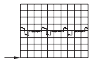
V19


1V / div DC
10us / div

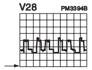
V20


1V / div DC
10us / div

V21

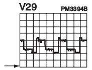

1V / div DC
10us / div

V28



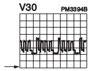
1V / div DC
10us / div

V29



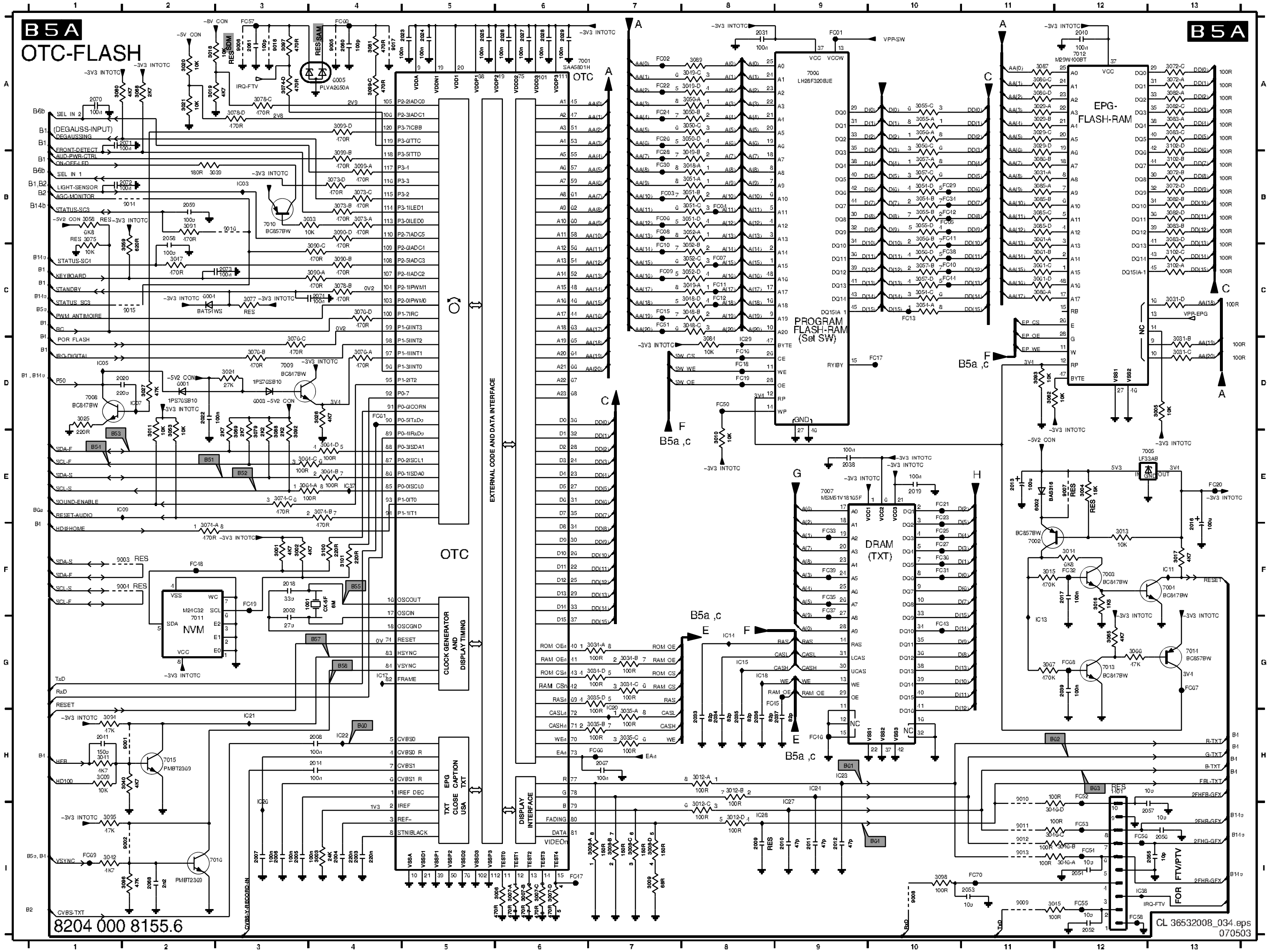
1V / div DC
10us / div

V30



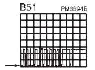
1V / div DC
10us / div

Small Signal Board: OTC Flash


B5A
OTC-FLASH
OTC
7001
SAA5801H
EXTERNAL CODE AND DATA INTERFACE
CLOCK GENERATOR AND DISPLAY TIMING
EPG CAPTION CLOSE USA TXT
DISPLAY INTERFACE
7006
LH28F320BJE
PROGRAM FLASH-RAM (Set SW)
7012
M29W400BT
EPG-FLASH-RAM
7007
MSM51V18165F
DRAM (TXT)
7011
M24C32
NVM
7010
BC857BW
7009
BC847BW
7008
BC847BW
7015
PMBT2369
7016
PMBT2369
7002
BC857BW
7003
BC847BW
7004
BC857BW
7013
BC847BW
7014
BC857BW
7005
LF33AB
6005
PLVA2650A
1001
CX-5F
6M
1401
FOR FTV/PTV
-3V3 INTOTC
-5V2 CON
-8V CON
VPP-SW
IRQ-FTV
SEL IN 2
(DEGAUSS-INPUT)
DEGAUSSING
FRONT-DETECT
AUD-PWR-CTRL
ON-OFF-LED
SEL IN 1
LIGHT-SENSOR
AGC-MONITOR
STATUS-SC3
STATUS-SC1
KEYBOARD
STANDBY
STATUS_SC3
PWM ANTIMOIRE
RC
POR FLASH
IRQ-DIGITAL
P50
SDA-F
SCL-F
SDA-S
SCL-S
SOUND-ENABLE
RESET-AUDIO
HD@HOME
TxD
RxD
RESET
HFB
HD100
VSYNC
CVBS-TXT
CVBS-Y-RECORD-IN
R-TXT
G-TXT
B-TXT
FBL-TXT
2FHR-GFX
2FHB-GFX
2FHG-GFX
2FHB-GFX
RES
B5a ,c
B51
B52
B53
B54
B55
B57
B58
B60
B61
B62
B63
8204 000 8155.6
CL 36532008_034.eps
070503

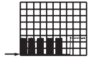
1001	F4
1401	H12
2002	F3
2003	I4
2004	I4
2005	I3
2006	I3
2007	I3
2008	H4
2009	I8
2010	I9
2011	I9
2012	I9
2013	E11
2014	H4
2016	F13
2017	F12
2018	F3
2019	E10
2020	D2
2022	D2
2023	A5
2024	A5
2025	A5
2026	A6
2027	A6
2028	A6
2029	A6
2031	A8
2033	H8
2034	H8
2035	H8
2036	H8
2037	H9
2038	E9
2039	G12
2040	A12
2041	H1
2052	I12
2053	I11
2054	I12
2055	I13
2056	I13
2057	I13
2058	B2
2059	B2
2060	A4
2061	A3
2067	H7
2068	I2
2070	A1
2071	A2
2072	B2
2073	C3
2074	C4
3001	F3
3002	F3
3003	I4
3004	E12
3005	D13
3006	I6
3007-A	I6
3007-B	I6
3007-C	I6
3007-D	I6
3008-A	I7
3008-B	I7
3008-C	I7
3008-D	I7
3009	I7
3010	E8
3011	E2
3012-A	H8
3012-B	H8
3012-C	I8
3012-D	I8
3013	F12
3014	F12
3015	F11
3016	F12
3017	F13
3018	A2
3019	A2
3020	A2
3021	A2
3024	D3
3025	D1
3026	D4
3027	D2
3029-A	A11
3029-B	A11
3029-C	A11
3029-D	A11
3031-A	B11
3031-B	D13
3031-C	D13
3031-D	C13
3033	B4
3034-A	G7
3034-B	G7
3034-C	G7
3034-D	G7
3035-A	H7
3035-B	H7
3035-C	H7
3035-D	G7
3039	B2
3040	H2
3041	H1
3042	I1
3045	I12
3046-A	I12
3046-B	I12
3046-C	I12
3046-D	I12
3047	C2
3048-A	B8
3048-B	C8
3048-C	C8
3048-D	C8
3049-A	C8
3049-B	B8
3049-C	A8
3049-D	A8
3050-A	A8
3050-B	A8
3050-C	A8
3050-D	A8
3051-A	B8
3051-B	B8
3051-C	B8
3051-D	B8
3052-A	B8
3052-B	C8
3052-C	C8
3052-D	C8
3053	E2
3054-A	C10
3054-B	B10
3054-C	C10
3054-D	B10
3055-A	A10
3055-B	B10
3055-C	A10
3055-D	B10
3056-A	A10
3056-B	B10
3056-C	A10
3056-D	C10
3057-A	B10
3057-B	C10
3057-C	B10
3057-D	C10
3058	B1
3059	C2
3061-A	B11
3061-B	C11
3061-C	C11
3061-D	C11
3062	D11
3064-A	E3
3064-B	E4
3064-C	E3
3064-D	E4
3065	G12
3066	G12
3067	G11
3068	A2
3069	E3
3072-A	A13
3072-B	B13
3072-C	A13
3072-D	B13
3073-A	B4
3073-B	B4
3073-C	B4
3073-D	B4
3074-A	F2
3074-B	E4
3074-C	E3
3074-D	A3
3075	B1
3076-A	D4
3076-B	D3
3076-C	D3
3076-D	C4
3077	C3
3078-B	C4
3078-C	A3
3078-D	A3
3079	E3
3080	A1
3081	A4
3082-A	A13
3082-B	B13
3082-C	A13
3082-D	B13
3083-A	A13
3083-B	B13
3083-C	A13
3083-D	B13
3084	D8
3085-A	B11
3085-B	B11
3085-C	B11
3085-D	B11
3086-A	C11
3086-B	B11
3086-C	A11
3086-D	A11
3087	A11
3088	E3
3089	A8
3090-A	C4
3090-B	C4
3090-C	C4
3090-D	B4
3091	B2
3092	E3
3093	D11
3094	H1
3095	I1
3096	I2
3097	A3
3098	I10
3099-A	B4
3099-B	B4
3099-C	A4
3099-D	A4
3100	F4
3101	F4
3C08-A	C13
3C08-B	B13
3C08-C	C13
3C08-D	A13
3C09	H1
6001	D2
6002	E11
6003	D3
6004	C2
6005	A4
7001	A6
7002	F11
7003	F12
7004	F13
7005	E13
7006	A9
7007	F10
7008	D1
7009	D3
7010	B3
7011	G2
7012	A12
7013	G12
7014	G13
7015	H2
7016	I2
9001	H2
9002	I2
9003	F2
9004	F2
9005	A4
9006	A3
9007	E12
9008	I10
9009	I11
9010	H11
9011	I11
9012	I11
9013	I11
9014	B2
9015	C2
9016	B3
9017	A4
9018	A3
FC01	A9
FC02	A7
FC03	B7
FC04	B8
FC05	B10
FC06	B7
FC07	C8
FC08	B7
FC09	C7
FC10	C7
FC11	C8
FC12	C8
FC13	C10
FC15	C7
FC16	D8
FC17	D10
FC18	D8
FC19	D8
FC20	E13
FC21	E10
FC22	A7
FC23	E10
FC24	A7
FC25	F10
FC26	A7
FC27	F10
FC28	B7
FC29	B10
FC30	B7
FC31	F10
FC32	F12
FC33	F9
FC34	B10
FC35	F9
FC36	F10
FC37	F9
FC38	C10
FC39	F9
FC40	C10
FC41	B10
FC42	B10
FC43	G10
FC44	C10
FC45	G8
FC46	H9
FC47	I6
FC48	F2
FC49	F3
FC50	D8
FC51	C7
FC52	H12
FC53	I12
FC54	I12
FC55	I12
FC56	I12
FC57	A3
FC58	I12
FC60	A4
FC61	D4
FC66	H7
FC67	G13
FC68	G12
FC69	I1
FC70	I11
IC03	B3
IC05	D1
IC07	D2
IC09	E2
IC11	F13
IC13	G11
IC14	G8
IC15	G8
IC17	G4
IC18	G8
IC20	G7
IC21	H3
IC22	H4
IC23	H9
IC24	H9
IC26	H3
IC27	H9
IC28	I8
IC29	D8
IC37	E4
IC38	I12

B51



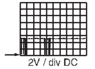
2V / div DC
100us / div

B52



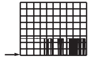
2V / div DC
100us / div

B53



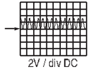
2V / div DC
5ms / div

B54



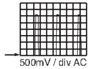
2V / div DC
5ms / div

B55



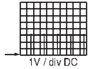
2V / div DC
250ns / div

B57



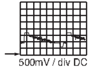
500mV / div AC
10us / div

B58



1V / div DC
5ms / div

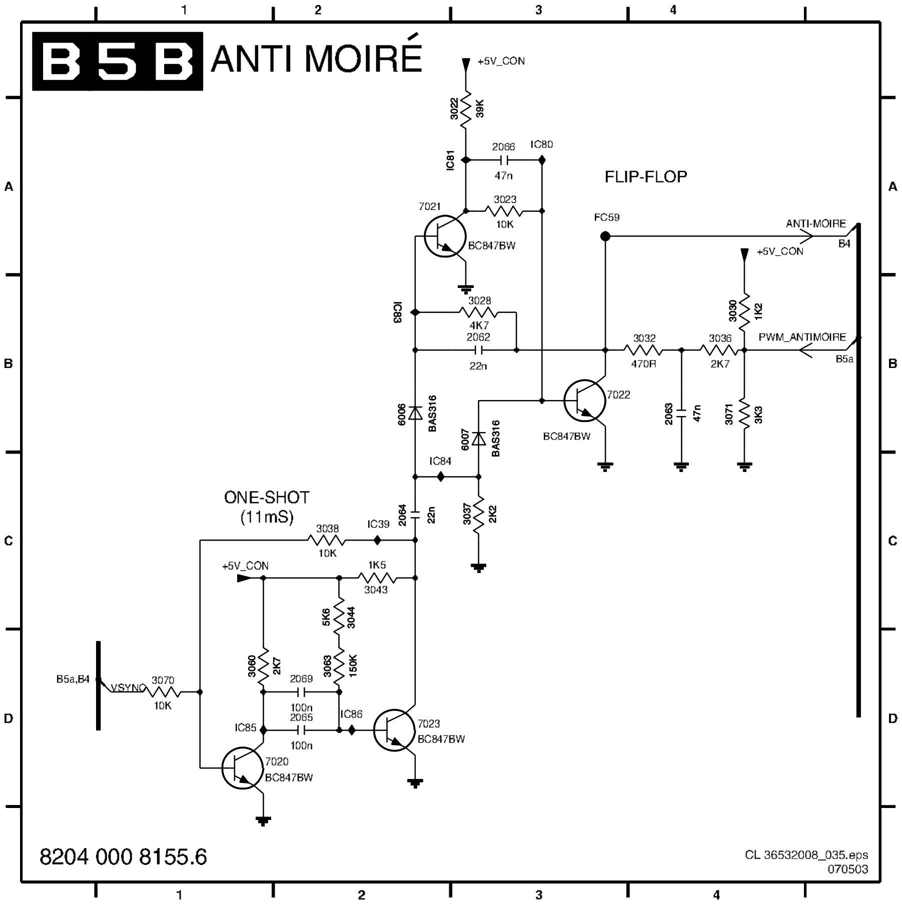
B60



500mV / div DC
10us / div

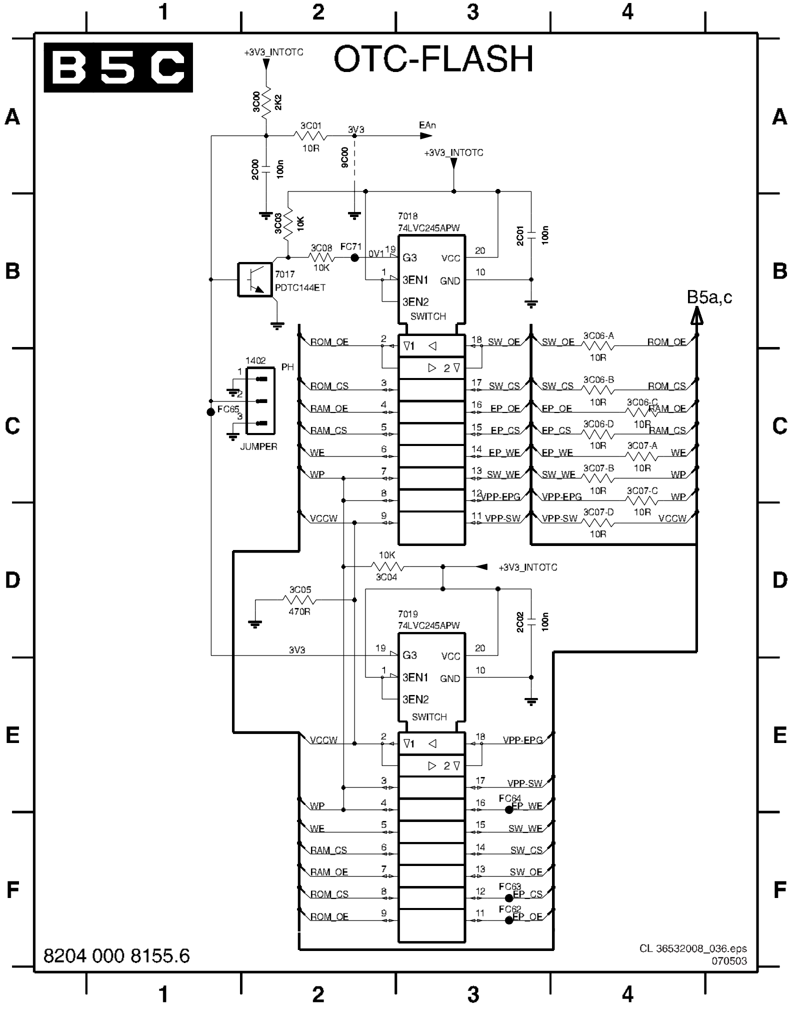
Small Signal Board: Anti-moiré

2062 B3
2063 B4
2064 C2
2065 D2
2066 A3
2069 D2
3022 A3
3023 A3
3028 B3
3030 B4
3032 B4
3036 B4
3037 C3
3038 C2
3043 C2
3044 C2
3060 D1
3063 D2
3070 D1
3071 B4
6006 B2
6007 B3
7020 D1
7021 A2
7022 B3
7023 D2
FC59 A3
IC39 C2
IC80 A3
IC81 A2
IC83 B2
IC84 C2
IC85 D1
IC86 D2

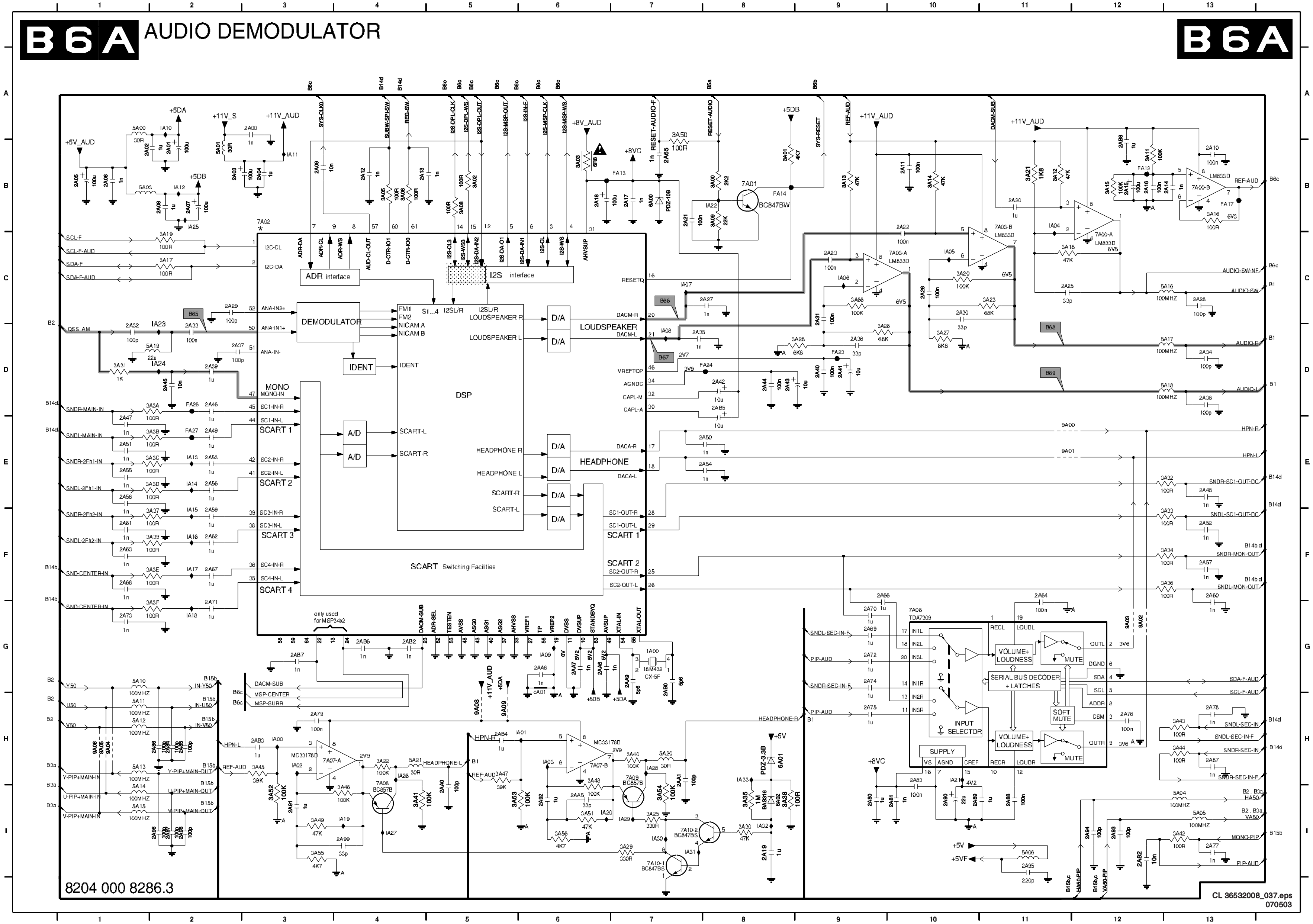

1
2
3
4
A
B
C
D
B5B
ANTI MOIRÉ
+5V_CON
3022
39K
2066
47n
IC80
IC81
3023
10K
7021
BC847BW
FLIP-FLOP
FC59
ANTI-MOIRE
B4
+5V_CON
3028
4K7
2062
22n
IC83
3030
1K2
3032
470R
3036
2K7
PWM_ANTIMOIRE
B5a
7022
BC847BW
6006
BAS316
6007
BAS316
2063
47n
3071
3K3
IC84
ONE-SHOT
(11mS)
3038
10K
IC39
2064
22n
3037
2K2
+5V_CON
1K5
3043
5K6
3044
3060
2K7
3063
150K
2069
100n
2065
100n
IC86
IC85
7023
BC847BW
7020
BC847BW
B5a,B4
VSYNC
3070
10K
8204 000 8155.6
CL 36532008_035.eps
070503

Small Signal Board: OTC Flash

1402 C2
2C00 A2
2C01 B3
2C02 D3
3C00 A1
3C01 A2
3C03 B2
3C04 D2
3C05 D2
3C06-A B4
3C06-B C4
3C06-C C4
3C06-D C4
3C07-A C4
3C07-B C4
3C07-C C4
3C07-D D4
3C08 B2
7017 B2
7018 B3
7019 D3
9C00 A2
FC62 F3
FC63 F3
FC64 E3
FC65 C1
FC71 B2


1
2
3
4
A
B
C
D
E
F
B5C
OTC-FLASH
+3V3_INTOTC
3C00
2K2
3C01
10R
3V3
EAn
9C00
2C00
100n
+3V3_INTOTC
3C03
10K
7018
74LVC245APW
2C01
100n
3C08
10K
FC71
0V1
G3
VCC
3EN1
GND
3EN2
SWITCH
7017
PDTC144ET
B5a,c
1402
PH
FC65
JUMPER
ROM_OE
ROM_CS
RAM_OE
RAM_CS
WE
WP
VCCW
SW_OE
SW_CS
EP_OE
EP_CS
EP_WE
SW_WE
VPP-EPG
VPP-SW
3C06-A
3C06-B
3C06-C
3C06-D
3C07-A
3C07-B
3C07-C
3C07-D
10R
10K
3C04
+3V3_INTOTC
3C05
470R
7019
74LVC245APW
2C02
100n
3V3
FC64
FC63
FC62
8204 000 8155.6
CL 36532008_036.eps
070503

Small Signal Board: Audio Demodulator


B6A
AUDIO DEMODULATOR
B6A
DEMODULATOR
IDENT
ADR interface
I2S interface
DSP
LOUDSPEAKER
HEADPHONE
SCART Switching Facilities
SCART 1
SCART 2
SCART 3
SCART 4
MONO
A/D
D/A
7A02
7A06 TDA7309
VOLUME+ LOUDNESS
SERIAL BUS DECODER + LATCHES
SOFT MUTE
INPUT SELECTOR
SUPPLY
7A00-A LM833D
7A00-B LM833D
7A03-A LM833D
7A03-B LM833D
7A07-A MC33178D
7A07-B MC33178D
7A01 BC847BW
7A08 BC857B
7A09 BC857B
7A10-1 BC847BS
7A10-2 BC847BS
1A00 18M432 CX-5F
+5V_AUD
+5DA
+5DB
+11V_S
+11V_AUD
+8V_AUD
+8VC
+5V
+5VF
B65
B66
B67
B68
B69
8204 000 8286.3
CL 36532008_037.eps
070503

1A00 G7
2A00 A3
2A01 B2
2A02 B1
2A03 B2
2A04 B3
2A05 B1
2A06 B1
2A07 B2
2A08 B2
2A09 B3
2A10 B13
2A11 B10
2A12 B4
2A13 B4
2A14 B13
2A15 B12
2A16 B12
2A17 B7
2A18 B6
2A19 I8
2A20 B11
2A21 B7
2A22 B10
2A23 C9
2A25 C11
2A26 C10
2A27 C7
2A28 C13
2A29 C2
2A30 C10
2A31 C9
2A32 D1
2A33 D2
2A34 D13
2A35 D7
2A36 D9
2A37 D2
2A38 D13
2A39 D2
2A40 D9
2A41 D9
2A42 D8
2A43 D8
2A44 D8
2A45 D2
2A46 D2
2A47 E1
2A48 E13
2A49 E2
2A50 E8
2A51 E1
2A52 F13
2A53 E2
2A54 E8
2A55 E1
2A56 E2
2A57 F13
2A58 E1
2A59 F2
2A60 F13
2A61 F1
2A62 F2
2A63 F1
2A64 F11
2A65 B7
2A66 F9
2A67 F2
2A68 F1
2A69 G9
2A70 G9
2A71 G2
2A72 G9
2A73 G1
2A74 G9
2A75 H9
2A76 H12
2A77 I13
2A78 H13
2A79 H3
2A80 I9
2A81 I10
2A82 I12
2A83 H10
2A84 H2
2A85 H2
2A86 H2
2A87 H13
2A88 I11
2A89 I10
2A90 I10
2A91 I3

2A92
2A93
2A94
2A95
2A96
2A97
2A98
2A99
2AA0
2AA1
2AA5
2AA6
2AA7
2AA8
2AA9
2AB0
2AB2
2AB3
2AB4
2AB5
2AB6
2AB7
2AB8
3A00
3A01
3A02
3A03
3A05
3A06
3A08
3A09
3A11
3A12
3A13
3A14
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3A32
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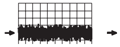
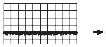
3A34
3A35
3A36
3A37
3A38
3A39
3A3A
3A3B
3A3C
3A3D
3A3E
3A3F
3A40
3A41
3A42
3A43
3A44
3A45
3A46
3A47
3A48
3A49
3A50
3A51
3A52
3A53
3A54
3A55
3A56
3A66
5A00
5A01
5A03
5A04
5A05
5A06
5A10
5A11
5A12

* 7A02	REMARK
MSP4450	USED IN COMBINATION WITH MAS 3528E AND DPL4519G

B65



B66



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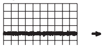
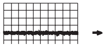
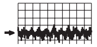


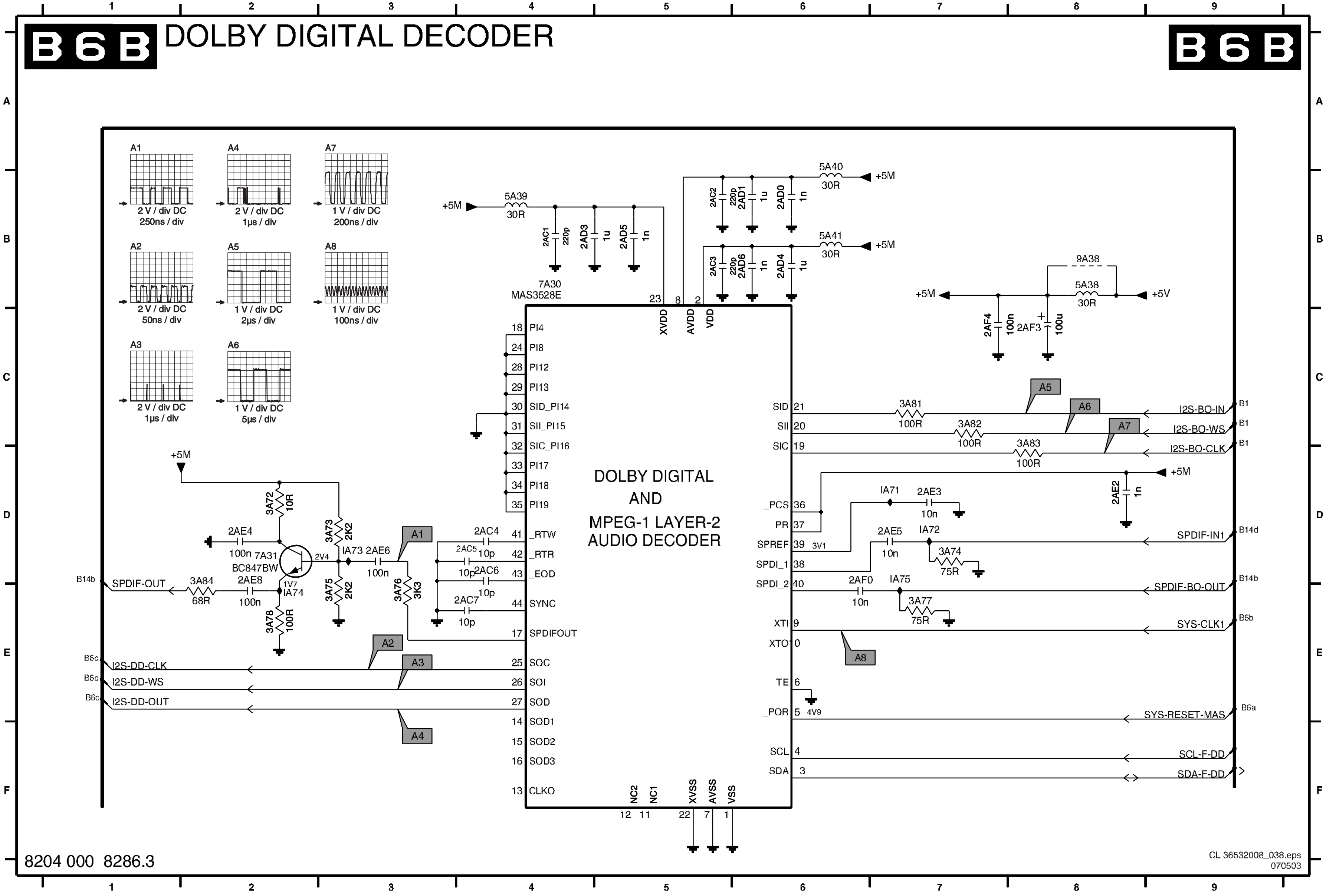
B68



B69

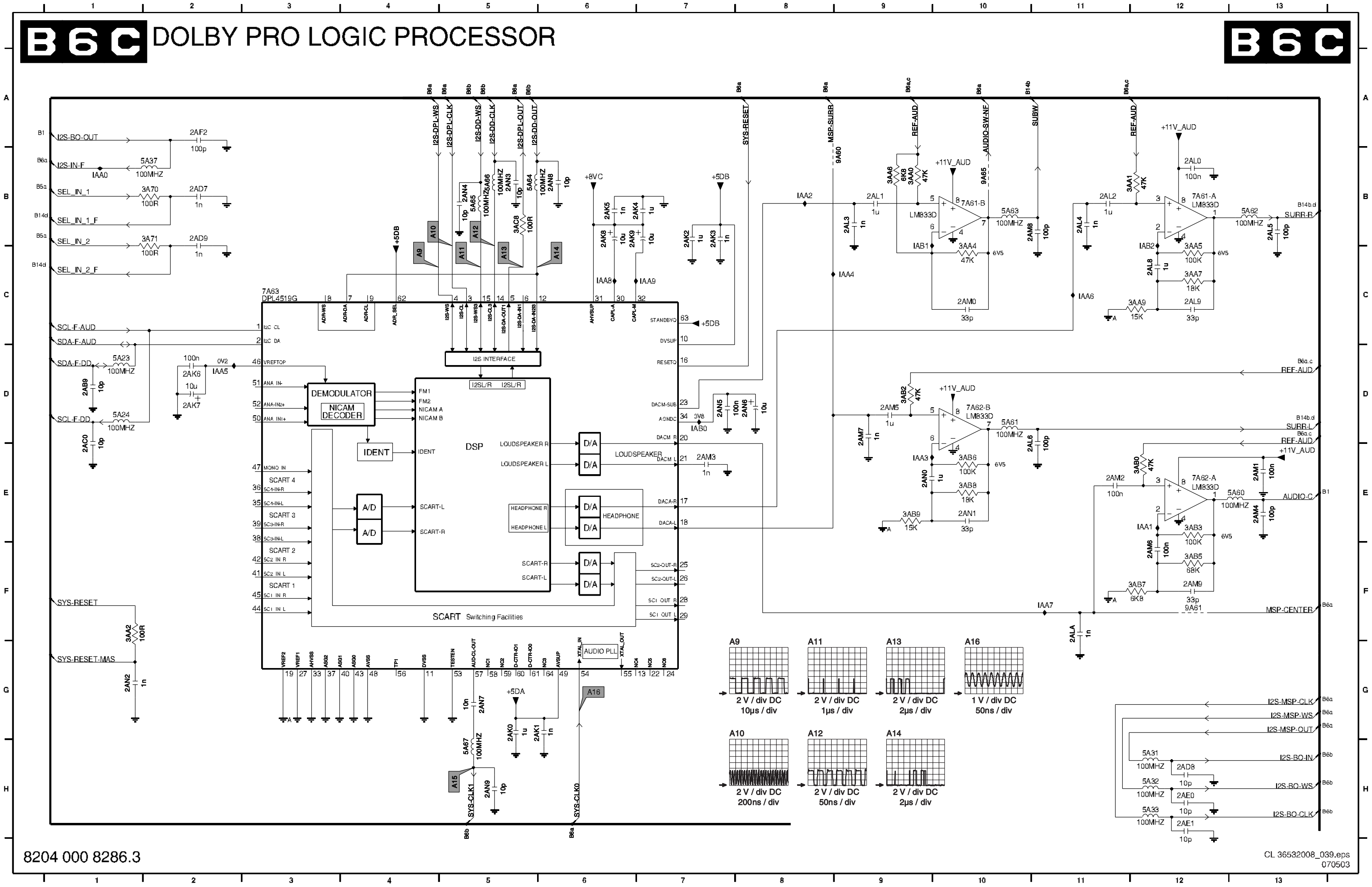


Small Signal Board: Dolby Digital Decoder


B6B
DOLBY DIGITAL DECODER
B6B
A1
2 V / div DC
250ns / div
A4
2 V / div DC
1µs / div
A7
1 V / div DC
200ns / div
A2
2 V / div DC
50ns / div
A5
1 V / div DC
2µs / div
A8
1 V / div DC
100ns / div
A3
2 V / div DC
1µs / div
A6
1 V / div DC
5µs / div
+5M
5A39
30R
2AC1 220p
2AD3 1u
2AD5 1n
5A40
30R
+5M
2AC2 220p
2AD1 1u
2AD0 1n
5A41
30R
+5M
2AC3 220p
2AD6 1n
2AD4 1u
9A38
5A38
30R
+5M
+5V
2AF4 100n
2AF3 100u
7A30
MAS3528E
23 XVDD
8 AVDD
2 VDD
18 PI4
24 PI8
28 PI12
29 PI13
30 SID_PI14
31 SII_PI15
32 SIC_PI16
33 PI17
34 PI18
35 PI19
41 _RTW
42 _RTR
43 _EOD
44 SYNC
17 SPDIFOUT
25 SOC
26 SOI
27 SOD
14 SOD1
15 SOD2
16 SOD3
13 CLKO
DOLBY DIGITAL
AND
MPEG-1 LAYER-2
AUDIO DECODER
SID 21
SII 20
SIC 19
_PCS 36
PR 37
SPREF 39 3V1
SPDI_1 38
SPDI_2 40
XTI 9
XTO 10
TE 6
_POR 5 4V9
SCL 4
SDA 3
NC2 12
NC1 11
XVSS 22
AVSS 7
VSS 1
3A81 100R
3A82 100R
3A83 100R
A5
A6
A7
I2S-BO-IN B1
I2S-BO-WS B1
I2S-BO-CLK B1
+5M
2AE2 1n
IA71
2AE3 10n
2AE5 10n
IA72
3A74 75R
2AF0 10n
IA75
3A77 75R
SPDIF-IN1 B14d
SPDIF-BO-OUT B14b
SYS-CLK1 B6b
A8
SYS-RESET-MAS B6a
SCL-F-DD
SDA-F-DD
+5M
3A72 10R
3A73 2K2
2AE4 100n
7A31
BC847BW
2V4
IA73
2AE6 100n
A1
3A76 3K3
3A75 2K2
1V7
IA74
2AE8 100n
3A84 68R
3A78 100R
B14b SPDIF-OUT
2AC4 10p
2AC5 10p
2AC6 10p
2AC7 10p
A2
A3
A4
B6c I2S-DD-CLK
B6c I2S-DD-WS
B6c I2S-DD-OUT
8204 000 8286.3
CL 36532008_038.eps
070503
1 2 3 4 5 6 7 8 9
A B C D E F

2AC1	B4
2AC2	B5
2AC3	B5
2AC4	D4
2AC5	D4
2AC6	D4
2AC7	E4
2AD0	B6
2AD1	B6
2AD3	B4
2AD4	B6
2AD5	B5
2AD6	B6
2AE2	D8
2AE3	D7
2AE4	D2
2AE5	D7
2AE6	D3
2AE8	D2
2AF0	D6
2AF3	C8
2AF4	C7
3A72	D2
3A73	D3
3A74	D7
3A75	E3
3A76	E3
3A77	E7
3A78	E2
3A81	C7
3A82	C7
3A83	D8
3A84	E2
5A38	B8
5A39	B4
5A40	A6
5A41	B6
7A30	B4
7A31	D2
9A38	B8
IA71	D7
IA72	D7
IA73	D3
IA74	E2
IA75	D7

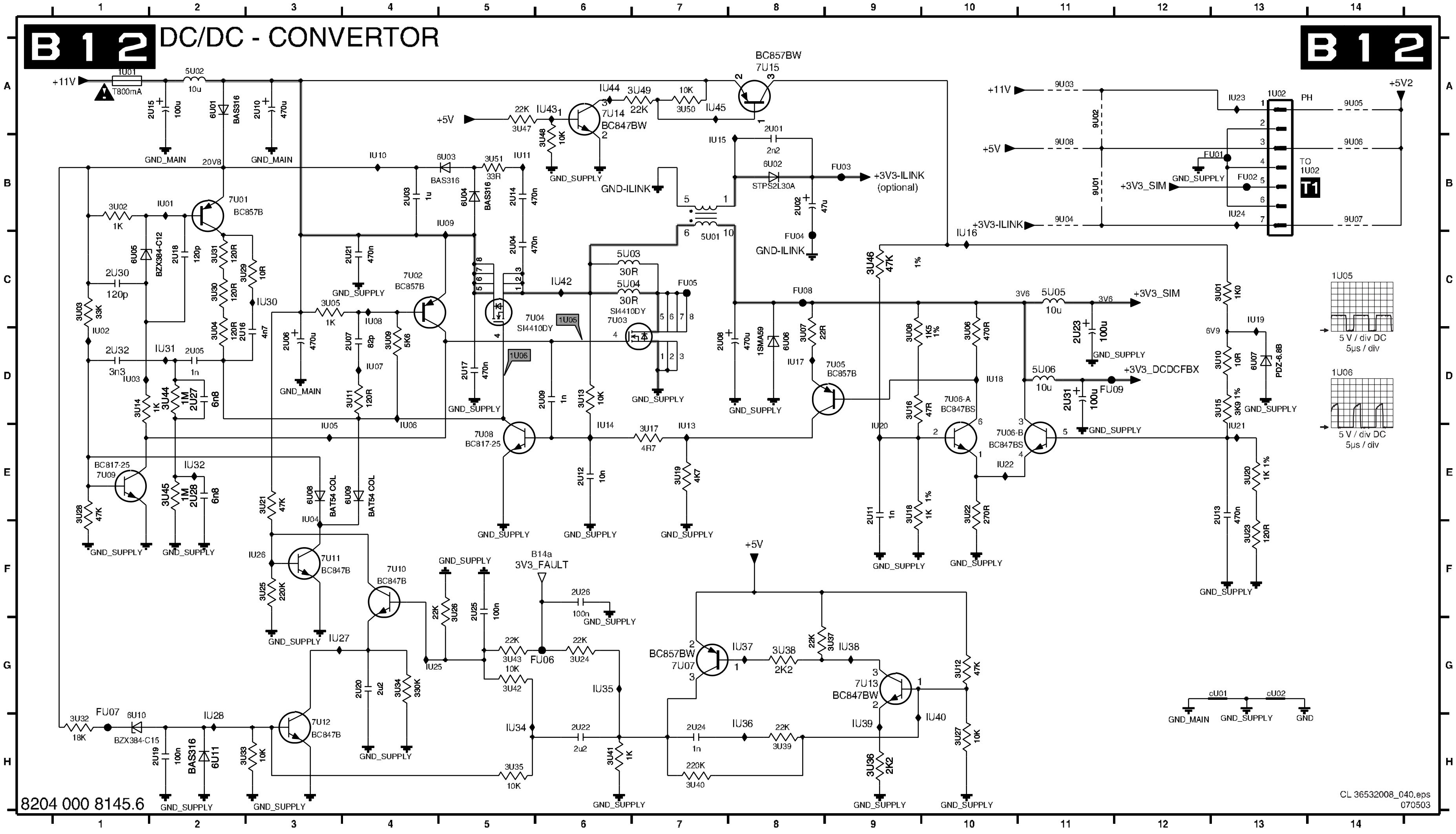
Small Signal Board: Dolby Prologic Processor


B6C
DOLBY PRO LOGIC PROCESSOR
B6C
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H
I2S-BO-OUT
I2S-IN-F
SEL_IN_1
SEL_IN_1_F
SEL_IN_2
SEL_IN_2_F
SCL-F-AUD
SDA-F-AUD
SDA-F-DD
SCL-F-DD
SYS-RESET
SYS-RESET-MAS
I2S-DPL-WS
I2S-DPL-CLK
I2S-DD-WS
I2S-DD-CLK
I2S-DPL-OUT
I2S-DD-OUT
SYS-RESET
MSP-SURR
REF-AUD
AUDIO-SW-NF
SUBW
REF-AUD
7A63
DPL4519G
I2S INTERFACE
DEMODULATOR
NICAM DECODER
IDENT
DSP
A/D
A/D
D/A
LOUDSPEAKER
HEADPHONE
SCART Switching Facilities
AUDIO PLL
7A61-B LM833D
7A61-A LM833D
7A62-B LM833D
7A62-A LM833D
SURR-R
SURR-L
REF-AUD
AUDIO-C
MSP-CENTER
I2S-MSP-CLK
I2S-MSP-WS
I2S-MSP-OUT
I2S-BO-IN
I2S-BO-WS
I2S-BO-CLK
SYS-CLK1
SYS-CLK0
A9
2 V / div DC
10µs / div
A11
2 V / div DC
1µs / div
A13
2 V / div DC
2µs / div
A16
1 V / div DC
50ns / div
A10
2 V / div DC
200ns / div
A12
2 V / div DC
50ns / div
A14
2 V / div DC
2µs / div
8204 000 8286.3
CL 36532008_039.eps
070503

2AB9	D1
2AC0	E1
2AD7	B2
2AD8	H12
2AD9	B2
2AE0	H12
2AE1	H12
2AF2	A2
2AK0	G5
2AK1	G6
2AK2	B7
2AK3	B7
2AK4	B7
2AK5	B6
2AK6	D2
2AK7	D2
2AK8	B6
2AK9	B6
2AL0	B12
2AL1	B9
2AL2	B11
2AL3	B9
2AL4	B11
2AL5	B13
2AL6	E11
2AL8	C12
2AL9	C12
2ALA	F11
2AM0	C10
2AM1	E13
2AM2	E11
2AM3	E7
2AM4	E13
2AM5	D9
2AM6	F12
2AM7	D9
2AM8	B11
2AM9	F12
2AN0	E9
2AN1	E10
2AN2	G1
2AN3	B5
2AN4	B5
2AN5	D7
2AN6	D8
2AN7	G5
2AN8	B6
2AN9	H5
3A70	B2
3A71	B2
3AA0	B9
3AA1	B12
3AA2	F1
3AA4	C10
3AA5	C12
3AA6	B9
3AA7	C12
3AA9	C12
3AB0	E12
3AB2	D9
3AB3	E12
3AB5	F12
3AB6	E10
3AB7	F12
3AB8	E10
3AB9	E9
3AC8	B5
5A23	D1
5A24	D1
5A31	H12
5A32	H12
5A33	H12
5A37	B2
5A60	E13
5A61	D10
5A62	B13
5A63	B10
5A64	B5
5A65	B5
5A66	B5
5A67	H5
7A61-A	B12
7A61-B	B10
7A62-A	E12
7A62-B	D10
7A63	C3
9A60	B9
9A61	F12
9A65	B10
IAA0	B1
IAA1	E12
IAA2	B8
IAA3	E9
IAA4	C9
IAA5	D2
IAA6	C11
IAA7	F11
IAA8	C6
IAA9	C7
IAB0	D7
IAB1	C9
IAB2	C12

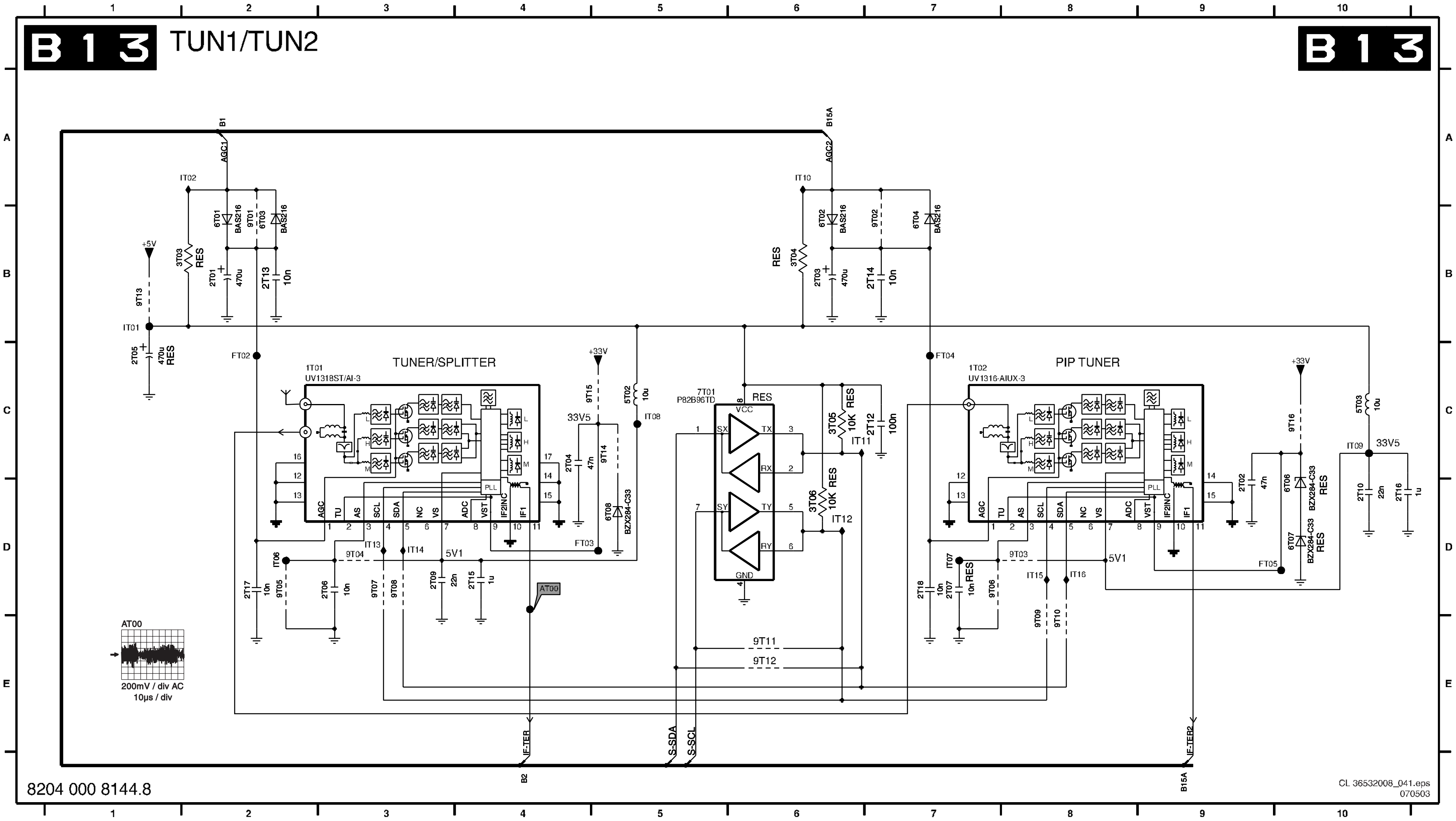
Small Signal Board: DC/DC-Convertor

1U01	A1
1U02	A13
2U01	A8
2U02	B8
2U03	B4
2U04	C5
2U05	D2
2U06	D3
2U07	D4
2U08	D7
2U09	D6
2U10	A3
2U11	E9
2U12	E6
2U13	E13
2U14	B5
2U15	A2
2U16	D2
2U17	D5
2U18	C2
2U19	H2
2U20	G4
2U21	C4
2U22	H6
2U23	D11
2U24	H7
2U25	F5
2U26	F6
2U27	D2
2U28	E2
2U30	C1
2U31	D11
2U32	D1
3U01	C13
3U02	B1
3U03	C1
3U04	D2
3U05	C3
3U06	D10
3U07	D8
3U08	D9
3U09	D4
3U10	D13
3U11	D4
3U12	G10
3U13	D6
3U14	D1
3U15	D13
3U16	D9
3U17	E7
3U18	E9
3U19	E7
3U20	E13
3U21	E3
3U22	E10
3U23	F13
3U24	G6
3U25	F3
3U26	F5
3U27	H10
3U28	E1
3U29	C3
3U30	C2
3U31	C2
3U32	H1
3U33	H3
3U34	G4
3U35	H5
3U36	H9
3U37	G9
3U38	G8
3U39	H8
3U40	H7
3U41	H6
3U42	G5
3U43	G5
3U44	D2
3U45	E2
3U46	C9
3U47	A5
3U48	B6
3U49	A7
3U50	A7
3U51	B5
5U01	C7
5U02	A2
5U03	C6
5U04	C6
5U05	C11
5U06	D11
6U01	A2
6U02	B8
6U03	B5
6U04	B5
6U05	C1
6U06	D8
6U07	D13
6U08	E3
6U09	E4
6U10	H1
6U11	H2
7U01	B2
7U02	C4
7U03	C6
7U04	C5
7U05	D9
7U06-A	D10
7U06-B	E11
7U07	G7
7U08	E5
7U09	E1
7U10	F4
7U11	F3
7U12	H3
7U13	G9
7U14	A6
7U15	A8
9U01	B11
9U02	A11
9U03	A11
9U04	B11
9U05	A14
9U06	B14
9U07	B14
9U08	B11
FU01	B13
FU02	B13
FU03	B9
FU04	C8
FU05	C7
FU06	G6
FU07	H1
FU08	C8
FU09	D11
IU01	B2
IU02	D1
IU03	D1
IU04	E3
IU05	E3
IU06	E4
IU07	D4
IU08	C4
IU09	B5
IU10	B4
IU11	B5
IU13	E7
IU14	E6
IU15	B7
IU16	C10
IU17	D8
IU18	D10
IU19	C13
IU20	E9
IU21	E13
IU22	E10
IU23	A13
IU24	B13
IU25	G4
IU26	F3
IU27	G3
IU28	H2
IU30	C3
IU31	D2
IU32	E2
IU34	H5
IU35	G6
IU36	H8
IU37	G8
IU38	G9
IU39	H9
IU40	H10
IU42	C6
IU43	A6
IU44	A6
IU45	A7
cU01	G13
cU02	G13


B12
DC/DC - CONVERTOR
B12
+11V
1U01 T800mA
5U02 10u
2U15 100u
6U01 BAS316
2U10 470u
GND_MAIN
20V8
BC857BW 7U15
IU44 3U49 22K
10K 3U50
IU45
22K 3U47
IU43
3U48 10K
7U14 BC847BW
+5V
GND_SUPPLY
IU10 6U03 BAS316 3U51 33R IU11
2U03 1u
6U04 BAS316
2U14 470n
2U04 470n
IU15 2U01 2n2
6U02 STPS2L30A
FU03
+3V3-ILINK (optional)
GND-ILINK
5U01
2U02 47u
FU04
GND-ILINK
3U02 1K IU01
7U01 BC857B
6U05 BZX384-C12
2U18 120p
3U31 120R
3U29 10R
2U30 120p
3U03 33K
IU02
3U30 120R
IU30
3U04 120R
2U16 4n7
2U32 3n3
IU31 2U05 1n
IU03
3U14 1K
3U44 1M
2U27 6n8
IU09
7U02 BC857B
2U21 470n
GND_SUPPLY
3U05 1K
IU08
2U06 470u
2U07 82p
3U09 5K6
IU07
GND_MAIN
3U11 120R
IU05 IU06
7U04 SI4410DY
1U05
1U06
2U17 470n
IU42
5U03 30R
5U04 30R
SI4410DY 7U03
FU05
2U09 1n
3U13 10K
IU14
7U08 BC817-25
3U17 4R7
IU13
2U12 10n
3U19 4K7
2U08 470u
1SMA59
6U06
FU08
3U07 22R
IU17
7U05 BC857B
3U46 47K
1%
IU16
3V6 5U05 10u 3V6
+3V3_SIM
2U23 100u
5U06 10u
+3V3_DCDCFBX
2U31 100u
FU09
3U08 1K5 1%
3U06 470R
IU18
3U16 47R
7U06-A BC847BS
7U06-B BC847BS
IU20
IU22
2U11 1n
3U18 1K 1%
3U22 270R
+11V 9U03
9U02
IU23
1U02 PH
+5V2
9U05
+5V 9U08
9U06
FU01
FU02
9U01
+3V3_SIM
TO 1U02
T1
IU24
+3V3-ILINK 9U04
9U07
3U01 1K0
IU19
6V9
3U10 10R
6U07 PDZ-6.8B
3U15 3K9 1%
IU21
3U20 1K 1%
2U13 470n
3U23 120R
1U05
5 V / div DC
5µs / div
1U06
5 V / div DC
5µs / div
BC817-25 7U09
3U28 47K
IU32
3U45 1M
2U28 6n8
3U21 47K
6U08 BAT54 COL
6U09 BAT54 COL
IU04
IU26
7U11 BC847B
3U25 220K
7U10 BC847B
IU27
B14a 3V3_FAULT
2U26 100n
3U26 22K
2U25 100n
3U43 22K
FU06
3U24 22K
IU25
3U42 10K
IU35
IU34
2U22 2u2
3U41 1K
+5V
BC857BW 7U07
IU37
3U38 2K2
3U37 22K
IU38
7U13 BC847BW
IU40
3U12 47K
2U24 1n
IU36
3U39 22K
IU39
3U40 220K
3U36 2K2
3U27 10K
3U32 18K
FU07
6U10 BZX384-C15
IU28
2U19 100n
6U11 BAS316
3U33 10K
7U12 BC847B
2U20 2u2
3U34 330K
3U35 10K
cU01 cU02
GND_MAIN GND_SUPPLY GND
8204 000 8145.6
CL 36532008_040.eps
070503
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H

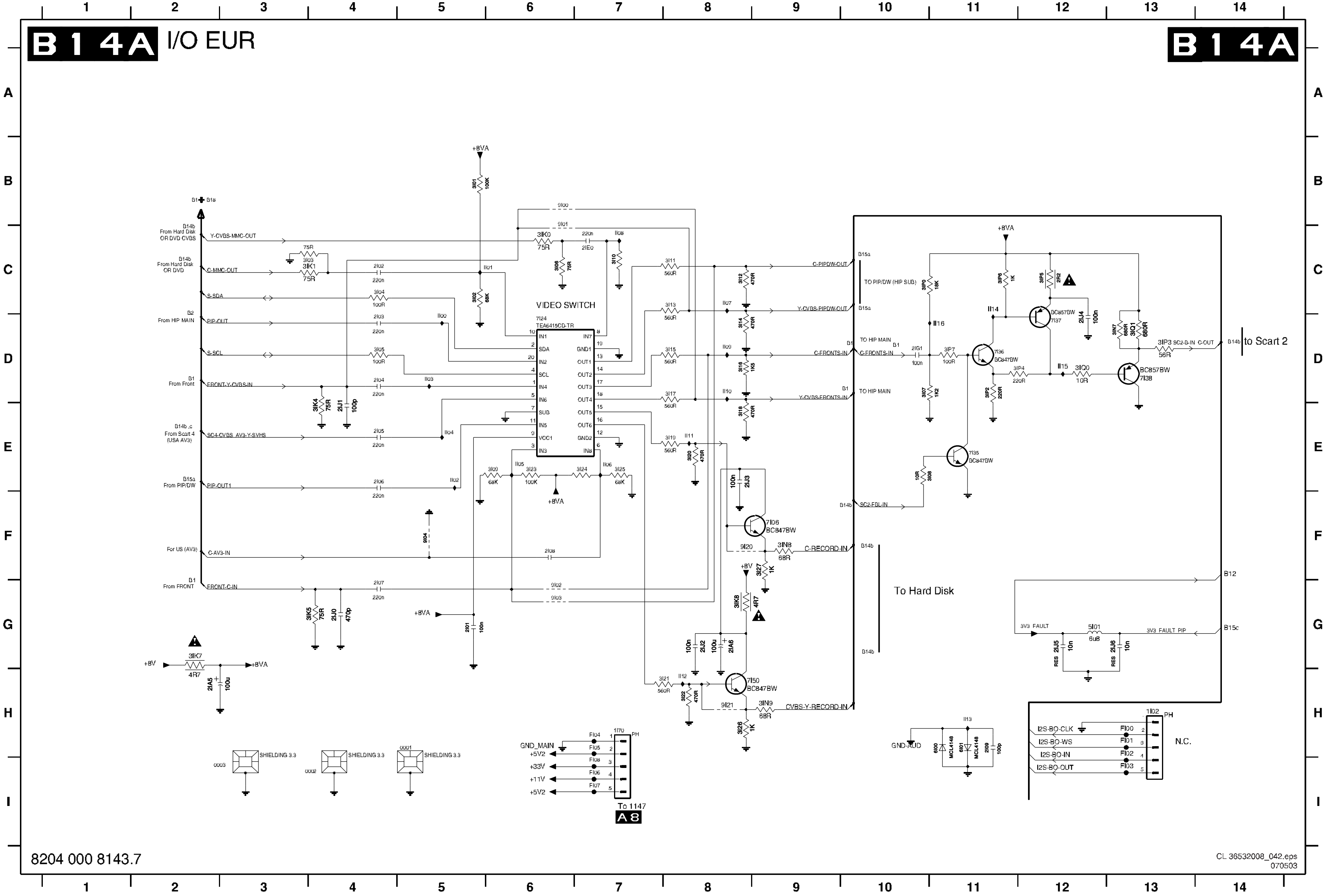
Small Signal Board: Tun1/Tun2

1T01 C2	2T02 D9	2T05 C1	2T09 D3	2T13 B2	2T16 D10	3T03 B2	3T06 D6	6T01 B2	6T04 B7	6T08 D5	9T02 B7	9T05 D2	9T08 D3	9T11 E6	9T14 C5	AT00 D4	FT04 C7	IT02 A2	IT08 C5	IT11 C6	IT14 D3
1T02 C7	2T03 B6	2T06 D3	2T10 D10	2T14 B7	2T17 D2	3T04 B6	5T02 C5	6T02 B6	6T06 D10	7T01 C5	9T03 D8	9T06 D7	9T09 E8	9T12 E6	9T15 C5	FT02 C2	FT05 D9	IT06 D2	IT09 C10	IT12 D6	IT15 D8
2T01 B2	2T04 C4	2T07 D7	2T12 C7	2T15 E3	2T18 D7	3T05 C6	5T03 C10	6T03 B2	6T07 D10	9T01 B2	9T04 D3	9T07 D3	9T10 E8	9T13 B1	9T16 C10	FT03 D4	IT01 B1	IT07 D7	IT10 A6	IT13 D3	IT16 D8



1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
B13
TUN1/TUN2
B1
AGC1
B15A
AGC2
IT02
IT10
6T01
BAS216
9T01
6T03
BAS216
6T02
BAS216
9T02
6T04
BAS216
+5V
3T03
RES
3T04
RES
2T01
470u
2T13
10n
2T03
470u
2T14
10n
9T13
IT01
2T05
470u
RES
FT02
FT04
TUNER/SPLITTER
1T01
UV1318ST/AI-3
L
H
M
PLL
AGC
TU
AS
SCL
SDA
NC
VS
ADC
VST
IF2INC
IF1
16
12
13
17
14
15
1
2
3
4
5
6
7
8
9
10
11
+33V
9T15
33V5
2T04
47n
9T14
6T08
BZX284-C33
5T02
10u
IT08
FT03
IT06
9T04
IT13
IT14
5V1
2T17
10n
9T05
2T06
10n
9T07
9T08
2T09
22n
2T15
1u
AT00
7T01
P82B96TD
RES
VCC
SX
TX
RX
SY
TY
RY
GND
8
1
3
2
7
5
6
4
3T05
10K
RES
2T12
100n
IT11
3T06
10K
RES
IT12
9T11
9T12
PIP TUNER
1T02
UV1316-AIUX-3
+33V
9T16
2T02
47n
6T06
BZX284-C33
RES
6T07
BZX284-C33
RES
FT05
5T03
10u
IT09
33V5
2T10
22n
2T16
1u
IT07
2T18
10n
2T07
10n
RES
9T06
9T03
IT15
IT16
9T09
9T10
AT00
200mV / div AC
10µs / div
IF-TER
B2
S-SDA
S-SCL
IF-TER2
B15A
8204 000 8144.8
CL 36532008_041.eps
070503

Small Signal Board: I/O Eur


B14A
I/O EUR
VIDEO SWITCH
7I24
TEA6415CD-TR
IN1
SDA
IN2
SCL
IN4
IN6
SUB
IN5
VCC1
IN3
IN7
GND1
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
GND2
IN8
From Hard Disk OR DVD CVBS
Y-CVBS-MMC-OUT
From Hard Disk OR DVD
C-MMC-OUT
S-SDA
From HIP MAIN
PIP-OUT
S-SCL
From Front
FRONT-Y-CVBS-IN
From Scart 4 (USA AV3)
SC4-CVBS_AV3-Y-SVHS
From PIP/DW
PIP-OUT1
For US (AV3)
C-AV3-IN
From FRONT
FRONT-C-IN
+8VA
+8V
3IK7
4R7
2IA5
100u
C-PIPDW-OUT
Y-CVBS-PIPDW-OUT
C-FRONTS-IN
Y-CVBS-FRONTS-IN
TO PIP/DW (HIP SUB)
TO HIP MAIN
C-FRONTS-IN
BC857BW
7I37
BC847BW
7I36
BC857BW
7I38
7I35
BC847BW
3IP3 SC2-B-IN_C-OUT
to Scart 2
SC2-FBL-IN
7I06
BC847BW
C-RECORD-IN
To Hard Disk
7I50
BC847BW
CVBS-Y-RECORD-IN
3V3_FAULT
5I01
6u8
3V3_FAULT_PIP
B12
B15c
GND-AUD
MCL4148
I2S-BO-CLK
I2S-BO-WS
I2S-BO-IN
I2S-BO-OUT
1I02
N.C.
GND_MAIN
+5V2
+33V
+11V
+5V2
1I70
To 1147
A8
SHIELDING 3.3
0003
0002
0001
8204 000 8143.7
CL 36532008_042.eps
070503

0001	H5
0002	I3
0003	I2
1I02	H13
1I70	H7
2I01	G5
2I02	C4
2I03	D4
2I04	D4
2I05	E4
2I06	E4
2I07	G4
2I08	F6
2I09	H11
2IA5	H2
2IA6	G8
2IE0	C7
2IG1	D10
2IJ0	G4
2IJ1	E4
2IJ2	G8
2IJ3	E8
2IJ4	D12
2IJ5	G12
2IJ6	G13
3I01	B5
3I02	C5
3I03	C4
3I04	C4
3I05	D4
3I06	C6
3I07	D10
3I08	E10
3I09	E6
3I10	C7
3I11	C8
3I12	C8
3I13	C8
3I14	D8
3I15	D8
3I16	D8
3I17	D8
3I18	E8
3I19	E8
3I20	E8
3I21	H8
3I22	H8
3I23	E6
3I24	E7
3I25	E7
3I26	H8
3I27	F9
3IK0	C6
3IK1	C4
3IK4	E4
3IK5	G4
3IK7	G2
3IK8	G8
3IN7	D13
3IN8	F9
3IN9	H9
3IP0	C10
3IP2	D11
3IP3	D13
3IP4	D12
3IP5	C12
3IP6	C11
3IP7	D11
3IQ0	D12
3IQ1	D13
5I01	G12
6I00	H11
6I01	H11
7I06	F9
7I24	D6
7I35	E11
7I36	D11
7I37	D12
7I38	D13
7I50	H8
9I00	B6
9I01	C6
9I02	G6
9I03	G6
9I04	F5
9I20	F8
9I21	H8
FI00	H13
FI01	H13
FI02	H13
FI03	I13
FI04	H7
FI05	H7
FI06	I7
FI07	I7
FI08	I7
II00	D5
II01	C6
II02	E5
II03	D5
II04	E5
II05	E6
II06	E7
II07	C8
II08	C7
II09	D8
II10	D8
II11	E8
II12	H8
II13	H11
II14	C11
II15	D12
II16	D11

Small Signal Board: I/O Eur

V00 L18
V07 L20
1101-1 B4
1101-2 B9
1101-3 E21
1103 L18
1104-1 B15
1104-2 B20
1104-3 C14
1105-A F5
1105-B F5
1105-C G5
1106-1 J5
1106-2 K5
1106-3 J5
1106-4 H5
1106-5 H5
1106-6 I5
1108 L6
1111 G11
1113 I11
1114 I10
1125 B15
1126 C15
1127 C16
1128 E16
1129 B20
1130 C20
1131 C20
1132 E20
1134 B4
1135 B4
1136 C5
1137 B5
1138 B5
1139 B9
1140 B9
1141 C8
1142 D8
1143 D9
1144 D9
1145 C9
1146 B9
1147 B9
1148 F5
1149 G5
1150 H5
1151 H6
1152 I5
1153 I6
1154 I5
1155 J4
1156 J4
1157 K4
1158 G4
1171 C4
1172 C4
1173 D4
1174 E4
1175 E9
1176 E9
1180 H6
1181 M6
1182 L5
1183 M5
2110 B14
2111 C14
2112 C17
2113 B18
2114 C18
2115 C21
2116 B3
2117 B3
2118 B6
2119 B6
2120 C6
2121 B7
2122 B7
2123 B10
2124 B10
2125 C10
2126 F4
2127 G4
2128 H4
2129 I4
2130 I4
2131 H3
2132 I3
2133 J3
2134 J3
2135 K3
2136 G3
2137 K14
2138 G17
2141 G19
2142 I19
2143 I20
2144 I17
2145 H19
2146 K21
2147 M16
21A4 L14
21C0 F3
21C1 F3
21C2 H3
21C5 L3
21C6 L4
21C7 M4
21C8 M3
21C9 D8
21H3 L16
3134 B14
3135 B14
3136 C14
3137 C14
3138 C16
3139 C16
3140 E16
3141 E16
3142 B18
3143 B19
3144 C18
3145 C19
3146 C21
3147 C21
3148 E20
3149 E21
3150 A3
3151 A3
3152 B3
3153 B3
3154 C3
3155 C3
3156 C3
3157 C4
3158 D3
3159 D4
3160 D3
3161 A5
3162 B5
3163 C5
3164 C6
3165 D6
3166 D5
3167 E5
3168 D6
3169 A7
3170 A8
3171 B7
3172 B8
3173 C7
3174 C8
3175 C7
3176 D7
3177 D8
3178 D8
3179 A10
3180 B10
3181 C10
3182 C10
3183 C10
3184 D10
3185 D10
3186 D10
3187 D10
3188 E10
3189 F3
3190 F4
3191 F3
3192 F4
3194 H3
3195 H4
3196 H3
3197 H4
3198 L16
3199 I3
31A0 I4
31A1 M16
31A2 G3
31A3 G3
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31A5 G14
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31A7 H14
31A8 I14
31A9 I14
31B0 J14
31B1 K14
31B2 B6
31B4 K21
31B5 K21
31B7 H17
31B9 L15
31C0 I19
31C1 L20
31C2 L16
31C3 L16
31C4 B6
31C6 B11
31C7 I17
31C8 I19
31C9 I19
31D0 K20
31D3 I19
31K2 B10
31K3 B10
31N5 B6
31N6 B6
31P8 L3
31P9 M3
31S0 L4
31S1 M4
31S2 B11
31S3 B13
31S4 C13
31S5 B18
31S6 C18
31S8 I19
31S9 H19
31T0 F3
31T1 G3
31T2 H3
31T3 I3
31T4 I3
31T5 L3
31T6 M3
6110 B14
6111 B15
6112 C14
6113 C15
6114 C16
6115 E16
6116 B19
6117 B19
6118 C19
6119 C19
6120 C20
6121 E21
6122 B4
6123 B4
6124 B4
6125 B4
6126 C4
6127 C3
6128 D3
6129 E4
6130 B5
6131 B5
6132 B5
6133 B5
6134 C6
6135 D5
6136 E5
6137 B8
6138 B8
6139 B8
6140 B8
6141 C8
6142 C8
6143 E8
6144 D8
6145 B10
6146 B10
6147 B10
6148 B10
6149 C11
6150 D10
6151 D10
6152 E10
6153 F4
6154 F5
6155 F4
6156 G5
6157 H4
6158 H5
6159 H4
6160 I5
6161 I4
6162 J5
6163 J4
6164 J4
6165 J4
6166 K4
6167 K4
6168 K4
6169 G4
6170 G4
6173 K17
6174 J17
6175 J18
6176 J20
6177 J20
6178 I18
6179 J18
61A0 C5
61A1 M5
61A2 M5
61A3 L4
61A4 M4
61A5 J21
61A6 K21
61A7 K15
61A8 K21
7101-A F13
7101-B G13
7102-A H13
7102-B H13
7103-A I13
7103-B I13
7104-A J13
7105 K13
7107 K20
7108-A H18
7108-B H18
7109 K20
7144-A L15
7144-B L15
9107 J3
9108 K9
9109 J9
9110 K10
9111 J9
9112 L10
9113 J21
9114 K13
9115 K15
9116 K19
9117 D2
9118 I3
9119 M3
9175 K10
9176 K9
9178 K9
9192 J12
9193 J9
9194 I12
9197 K9
9198 L3
91B1 J8
91B2 J8
F110 L11
F111 L11
F112 K10
F113 K10
F114 K10
F115 I10
F116 I10
F117 I10
F118 I10
F119 I10
F120 B14
F121 B14
F122 B15
F123 D15
F124 C16
F125 D16
F126 B19
F127 B19
F128 B20
F129 D20
F130 C20
F131 D21
F132 A4
F133 B4
F134 B4
F135 C4
F136 C4
F137 D4
F138 D4
F139 D4
F140 E4
F141 A5
F142 B5
F143 C5
F144 D5
F145 D5
F146 A8
F147 B8
F148 B9
F149 C8
F150 G11
F151 C9
F152 D8
F153 D8
F154 D9
F155 C9
F156 D10
F157 C9
F158 B10
F159 A10
F160 F5
F161 F5
F162 H5
F163 I5
F164 I5
F165 J4
F166 J4
F167 M5
F168 G4
F169 H11
F191 H2
F192 H2
F193 I2
F194 K10
F196 H11
F197 L18
F198 L18
F199 L19
F1A0 L19
F1A1 L19
F1A2 L19
F1A3 L19
F1A4 L19
F1A6 L5
F1A8 K4
F1A9 H11
I120 B14
I121 B14
I122 C17
I123 B18
I124 B18
I125 A3
I126 B3
I127 C3
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I129 C6
I130 L4
I131 M4
I132 A7
I133 B7
I134 D10
I135 C10
I136 B10
I137 A10
I138 E3
I139 J12
I140 H19
I141 H3
I142 I3
I143 G3
I144 L13
I145 K15
I146 K21
I147 K20
I148 K20
I149 J21
I1A0 D3
I1A1 A6
I1A2 B6
I1A3 C8
I1A4 H3
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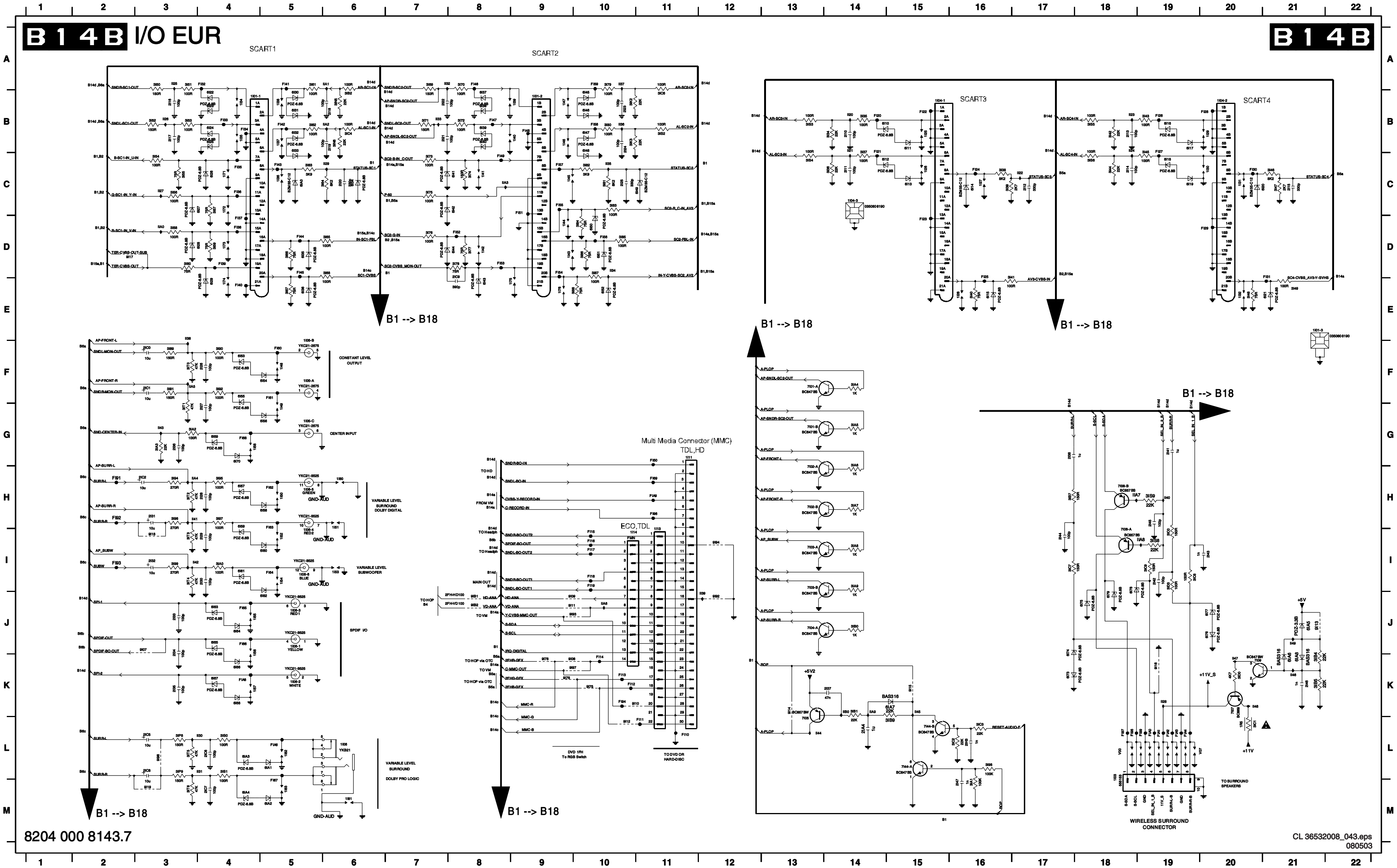
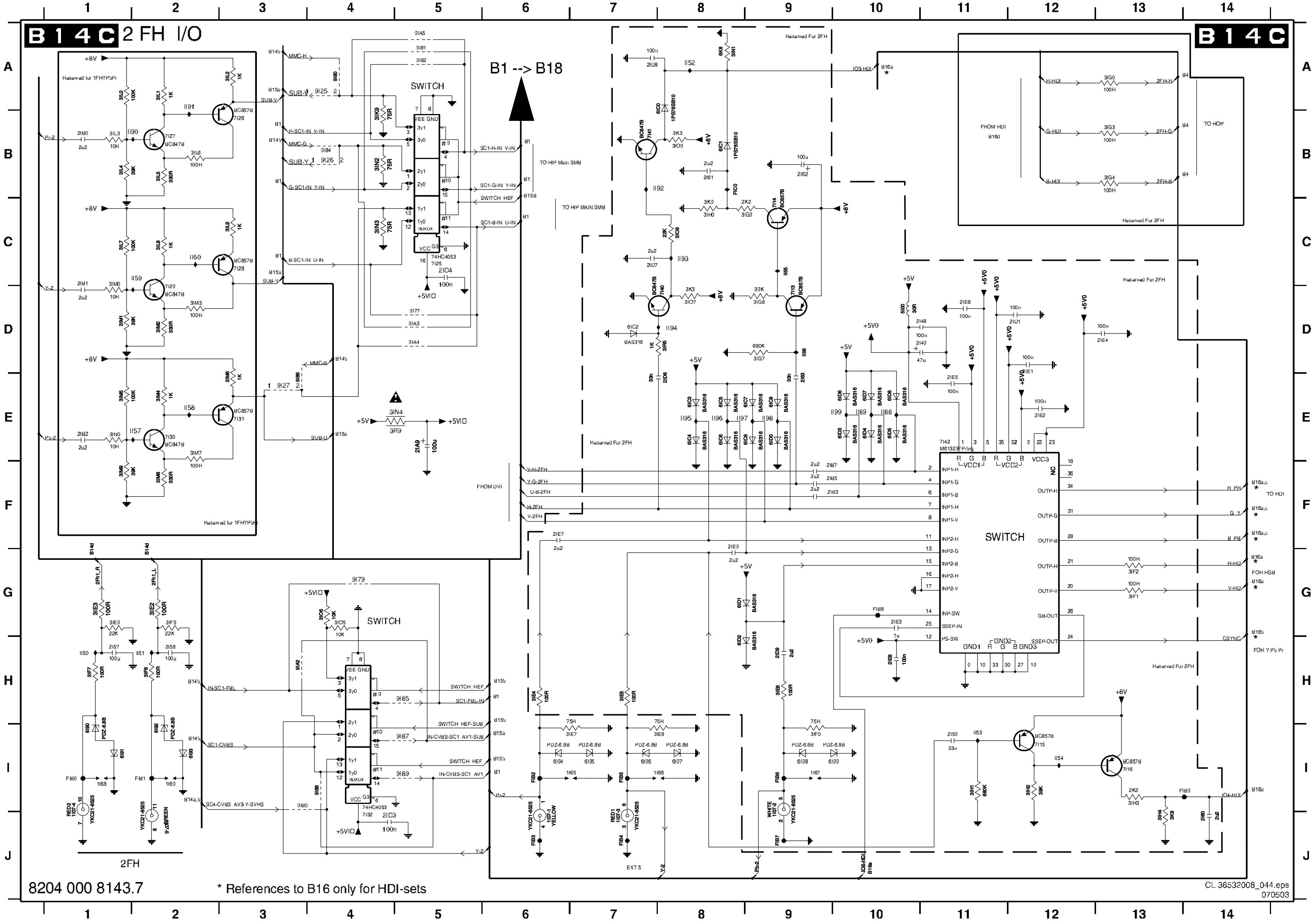
I1A6 J10
I1A7 H18
I1A8 I19
I1A9 K14
I1B0 K14


B14B I/O EUR
B14B
SCART1
SCART2
SCART3
SCART4
B1 --> B18
CONSTANT LEVEL OUTPUT
CENTER INPUT
VARIABLE LEVEL SURROUND DOLBY DIGITAL
VARIABLE LEVEL SUBWOOFER
SPDIF I/O
VARIABLE LEVEL SURROUND DOLBY PRO LOGIC
Multi Media Connector (MMC)
TDL_HD
ECO_TDL
DVD 1FH To RGB Switch
TO DVD OR HARD-DISC
WIRELESS SURROUND CONNECTOR
TO SURROUND SPEAKERS
GND-AUD
+5V
+5V2
+11V_S
+11V
BAS316
BC847BW
BC847BS
PDZ-6.8B
YKC21-2675
YKC21-3525
RESET-AUDIO-F
STATUS-SC1
STATUS-SC2
STATUS-SC3
STATUS-SC4
AV3-CVBS-IN
SC4-CVBS_AV3-Y-SVHS
0360808190
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J K L M

8204 000 8143.7

CL 36532008_043.eps
080503

Small Signal Board: 2FH I/O


B14C
2 FH I/O
B1 --> B18
SWITCH
SWITCH
SWITCH
Reserved for 1FHYPbPr
Reserved For 2FH
TO HIP Main SMB
TO HIP MAIN SMB
FROM DVI
FROM HDI
TO HOP
TO HDI
FOR HSB
FOH Y Pb Pr
74HC4053
M61323FP-ls
BC857B
BC847B
BAS316
PDZ-6.8B
YKC21-5525
RED
GREEN
WHITE
YELLOW
EXT 5
2FH
+8V
+5V
+5V0
+5VIO
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J

8204 000 8143.7

* References to B16 only for HDI-sets

CL 36532008_044.eps
070503

1I07-1	J6
1I07-2	I9
1I07-3	J7
1I07-4	I1
1I07-5	J2
1I65	I7
1I66	I8
1I67	I9
1I68	I1
1I69	I2
2I48	D11
2I49	D11
2I57	H1
2I58	H2
2I59	I11
2I60	J14
2I61	B8
2I62	B9
2I63	E9
2IA9	E5
2IB0	B1
2IB1	C1
2IB2	E1
2IB3	F10
2IB5	F9
2IB7	F9
2IC3	J4
2IC4	C5
2ID1	D12
2ID6	E8
2ID7	C7
2ID8	A7
2ID9	H9
2IE1	D12
2IE2	E12
2IE3	G10
2IE4	D13
2IE5	E11
2IE6	D11
2IE7	F6
2IE8	H10
2IE9	F8
3IE2	G2
3IE3	G1
3IE4	H6
3IE5	H7
3IE6	H9
3IE7	I7
3IE8	I8
3IE9	G1
3IF0	I9
3IF1	G13
3IF2	G13
3IF5	G2
3IF6	H2
3IF7	H1
3IG0	A13
3IG3	B13
3IG4	B13
3IG7	D9
3IG8	D9
3IG9	C9
3IH0	C8
3IH1	I11
3IH2	I12
3IH3	I13
3IH4	J13
3IK9	B4
3IL0	A1
3IL1	A2
3IL2	A3
3IL3	B1
3IL4	B1
3IL5	B2
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3IL8	C2
3IL9	C3
3IM0	D1
3IM1	D1
3IM2	D2
3IM3	D2
3IM4	E2
3IM5	E1
3IM6	E3
3IM7	E2
3IM8	F2
3IM9	F1
3IN0	E1
3IN1	A8
3IN2	B4
3IN3	C4
3IN4	E5
3IO5	G4
3IO6	G4
3IO7	D8
3IO8	C8
3IO9	B8
3IR5	D8
5I00	D10
6I90	I1
6I91	I1
6I92	I2
6I93	I2
6I94	I6
6I95	I7
6I96	I7
6I97	I8
6I98	I9
6I99	I10
6IC0	A8
6IC1	B8
6IC2	D7
6IC3	E8
6IC4	E8
6IC5	E8
6IC6	E8
6IC7	E9
6IC8	E9
6IC9	E9
6ID0	E9
6ID1	G8
6ID2	H8
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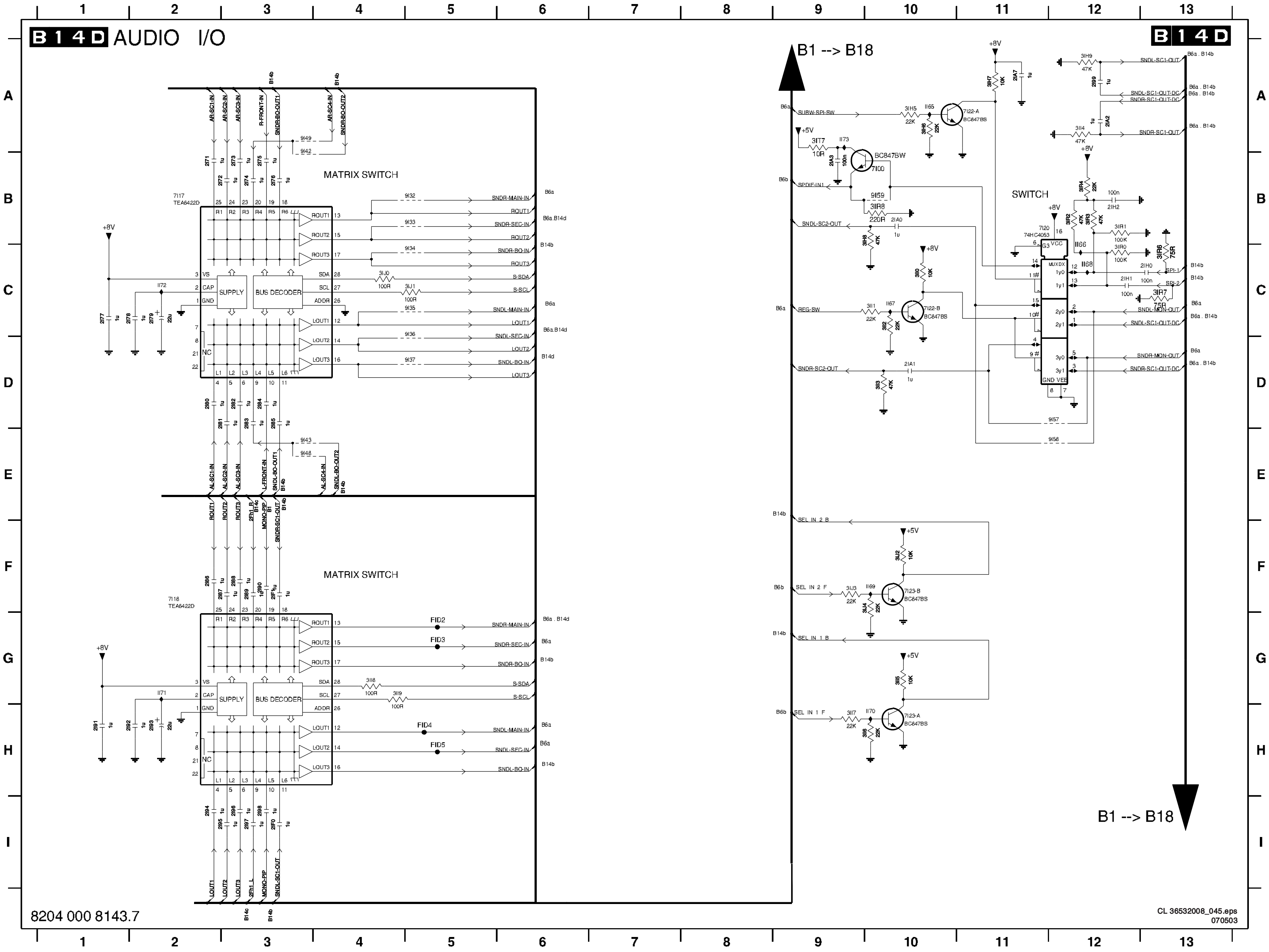
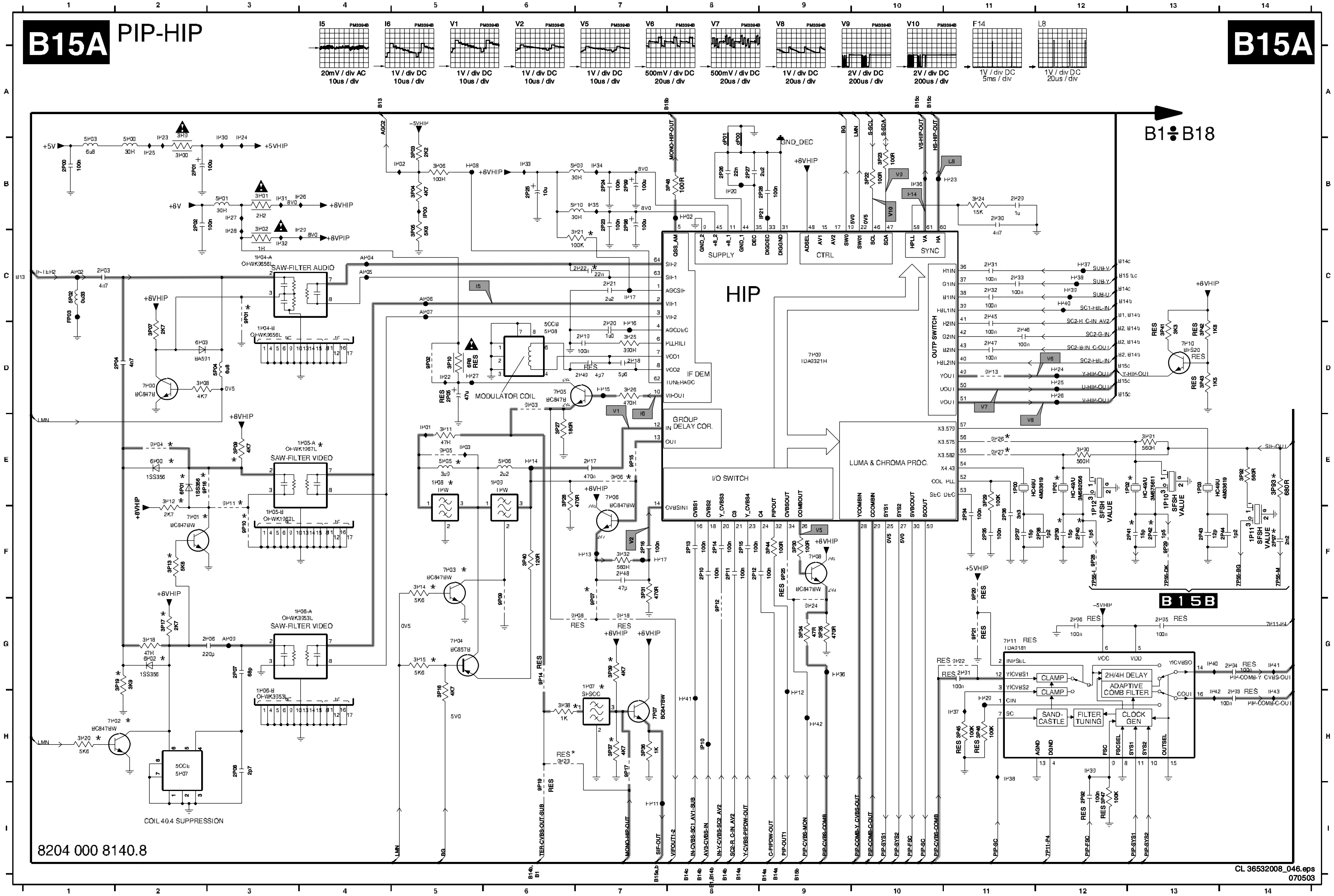
6ID5	E10
6ID6	E10
6ID7	E10
6ID8	E10
7I13	D9
7I14	C9
7I15	I12
7I16	I13
7I25	C5
7I26	B3
7I27	B2
7I28	C3
7I29	D2
7I30	E2
7I31	E3
7I32	J4
7I40	D8
7I41	B7
7I42	E11
9I25	A4
9I26	B4
9I27	E3
9I77	D5
9I79	G4
9I80	A4
9I81	A5
9I82	A5
9I84	B4
9I85	H5
9I86	E3
9I87	I5
9I88	I4
9I89	I5
9IA2	H3
9IA3	D5
9IA4	D5
9IA5	A5
9IB0	I3
FIB0	I1
FIB1	I2
FIB2	I6
FIB3	J6
FIB4	J7
FIB5	I7
FIB6	I9
FIB7	J9
FIB8	G10
FIB9	I14
FIC0	B8
II50	H1
II51	H2
II52	A8
II53	I11
II54	I12
II55	C9
II56	D9
II57	E2
II58	E2
II59	C2
II60	C2
II88	E10
II89	E10
II90	B2
II91	A2
II92	B8
II93	C8
II94	D8
II95	E8
II96	E8
II97	E8
II98	E9
II99	E10

Small Signal Board: Audio I/O


B14D AUDIO I/O
B1 --> B18
MATRIX SWITCH
7I17
TEA6422D
7I18
TEA6422D
SUPPLY
BUS DECODER
ROUT1
ROUT2
ROUT3
LOUT1
LOUT2
LOUT3
SDA
SCL
ADDR
VS
CAP
GND
NC
+8V
+5V
AR-SC1-IN
AR-SC2-IN
AR-SC3-IN
R-FRONT-IN
SNDR-BO-OUT1
AR-SC4-IN
SNDR-BO-OUT2
AL-SC1-IN
AL-SC2-IN
AL-SC3-IN
L-FRONT-IN
SNDL-BO-OUT1
AL-SC4-IN
SNDL-BO-OUT2
SNDR-MAIN-IN
SNDR-SEC-IN
SNDR-BO-IN
SNDL-MAIN-IN
SNDL-SEC-IN
SNDL-BO-IN
S-SDA
S-SCL
MONO-PIP
SNDR-SC1-OUT
SNDL-SC1-OUT
FID2
FID3
FID4
FID5
SWITCH
7I20
74HC4053
MUXDX
BC847BW
7I00
7I22-A
7I22-B
7I23-A
7I23-B
BC847BS
SURW-SPI-SW
SPDIF-IN1
SNDL-SC2-OUT
REG-SW
SNDR-SC2-OUT
SNDL-SC1-OUT-DC
SNDR-SC1-OUT-DC
SNDR-MON-OUT
SNDL-MON-OUT
SPI-1
SPI-2
SEL_IN_2_B
SEL_IN_2_F
SEL_IN_1_B
SEL_IN_1_F
B6a
B6b
B14b
B14d
8204 000 8143.7
CL 36532008_045.eps
070503

2I71	B2
2I72	B3
2I73	B3
2I74	B3
2I75	B3
2I76	B3
2I77	C1
2I78	C2
2I79	C2
2I80	D2
2I81	D3
2I82	D3
2I83	D3
2I84	D3
2I85	D3
2I86	F2
2I87	F3
2I88	F3
2I89	F3
2I90	F3
2I91	H1
2I92	H2
2I93	H2
2I94	I2
2I95	I3
2I96	I3
2I97	I3
2I98	I3
2I99	A12
2IA0	B10
2IA1	D10
2IA2	A12
2IA3	B9
2IA7	A11
2IF0	I3
2IF1	F3
2IH0	C13
2IH1	C12
2IH2	B12
3IH5	A10
3IH6	A10
3IH7	A11
3IH8	B10
3IH9	A12
3II0	C10
3II1	C10
3II2	C10
3II3	D10
3II4	A12
3II5	G10
3II6	H10
3II7	H9
3II8	G4
3II9	G4
3IJ0	C4
3IJ1	C5
3IJ2	F10
3IJ3	F9
3IJ4	F10
3IR0	C12
3IR1	B12
3IR2	B12
3IR3	B12
3IR4	B12
3IR6	C13
3IR7	C13
3IR8	B10
3IT7	A9
7I00	B10
7I17	B2
7I18	F2
7I20	B12
7I22-A	A11
7I22-B	C10
7I23-A	H10
7I23-B	F10
9I32	B5
9I33	B5
9I34	C5
9I35	C5
9I36	C5
9I37	D5
9I42	B3
9I43	E3
9I48	E3
9I49	A3
9I57	D12
9I58	E12
9I59	B10
FID2	G5
FID3	G5
FID4	H5
FID5	H5
II65	A10
II66	C12
II67	C10
II68	C12
II69	F10
II70	H10
II71	G2
II72	C2
II73	A9

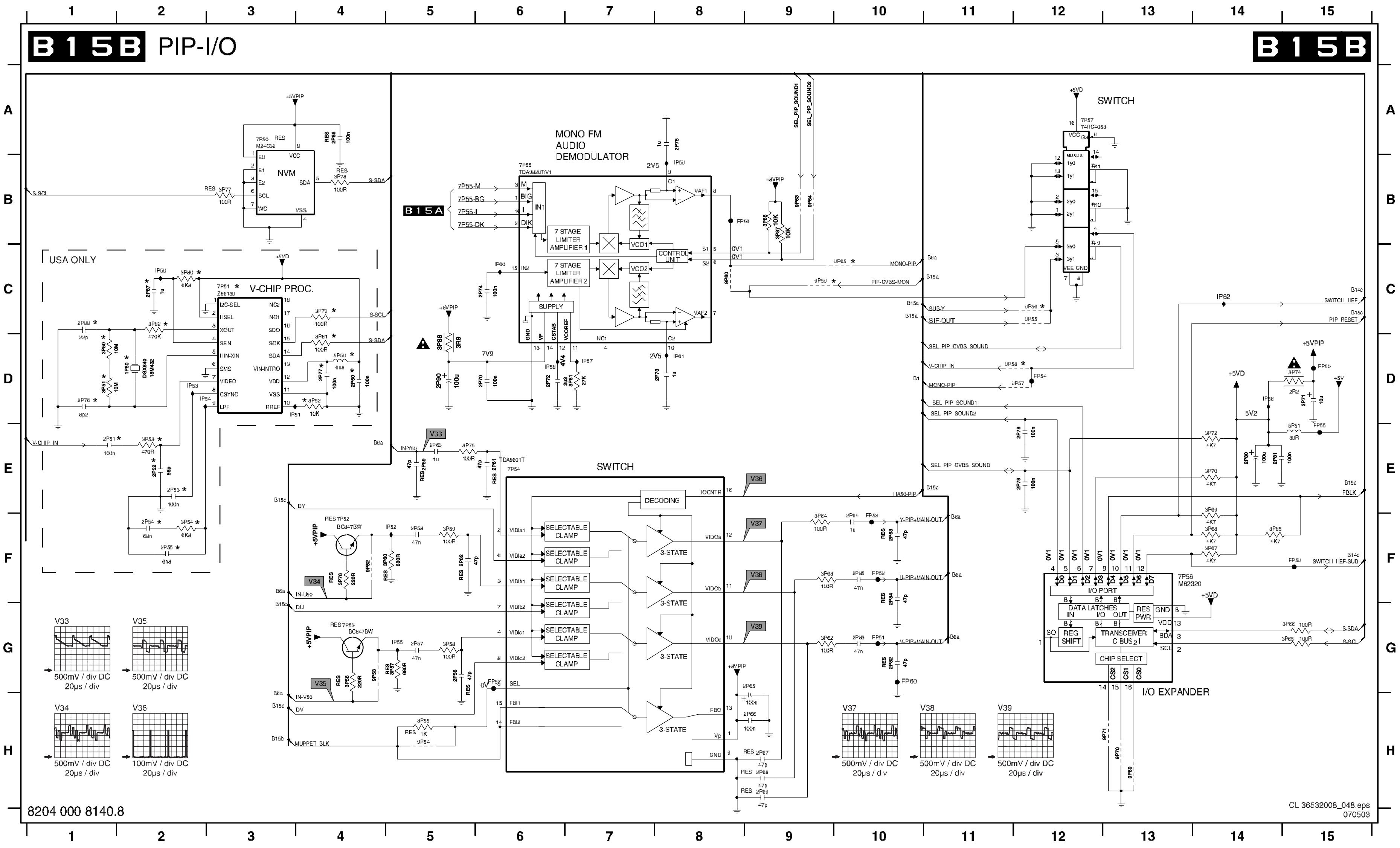
Small Signal Board: PIP-HIP


B15A
PIP-HIP
I5 20mV / div AC 10us / div
I6 1V / div DC 10us / div
V1 1V / div DC 10us / div
V2 1V / div DC 10us / div
V5 1V / div DC 10us / div
V6 500mV / div DC 20us / div
V7 500mV / div DC 20us / div
V8 1V / div DC 20us / div
V9 2V / div DC 200us / div
V10 2V / div DC 200us / div
F14 1V / div DC 5ms / div
L8 1V / div DC 20us / div
B1÷B18
HIP
TDA9321H
SUPPLY
CTRL
SYNC
OUTP SWITCH
IF DEM
GROUP DELAY COR.
I/O SWITCH
LUMA & CHROMA PROC.
SAW-FILTER AUDIO
SAW-FILTER VIDEO
MODULATOR COIL
COIL 40.4 SUPPRESSION
B15B
TDA9181
2H/4H DELAY
ADAPTIVE COMB FILTER
CLAMP
SAND-CASTLE
FILTER TUNING
CLOCK GEN
+5VHIP
+8VHIP
+8VPIP
8204 000 8140.8
CL 36532008_046.eps
070503

1000-A	E1
1P00	E11
1P01	E12
1P02	E13
1P03	E13
1P04-A	C3
1P04-B	D3
1P05-A	E4
1P05-B	F3
1P06-A	G4
1P06-B	H3
1P07	G7
1P08	E5
1P09	E6
1P10	E13
1P11	F14
1P12	E12
2P00	B1
2P01	B2
2P02	B2
2P03	C1
2P04	D2
2P05	D5
2P06	G3
2P07	G3
2P08	H3
2P10	F8
2P11	F8
2P12	F8
2P13	F8
2P14	F8
2P15	F8
2P16	F7
2P17	E7
2P18	D7
2P19	D7
2P20	D7
2P21	C7
2P22	C7
2P23	B7
2P24	B7
2P25	B6
2P26	B8
2P27	B8
2P28	B9
2P29	B11
2P30	B11
2P31	C11
2P32	C11
2P33	C11
2P34	F11
2P35	F11
2P36	F11
2P37	F11
2P38	F12
2P39	F12
2P40	F12
2P41	F13
2P42	F13
2P43	F13
2P44	F14
2P45	C11
2P46	D11
2P47	D11
2P48	F7
2P49	D7
2P91	G11
2P92	I12
2P93	H14
2P94	G14
2P95	G13
2P96	G12
2P97	F14
2P98	B7
2P99	B7
3P00	B2
3P01	B3
3P02	C3
3P03	B5
3P04	B5
3P05	C5
3P06	B5
3P07	D2
3P08	D2
3P09	E3
3P10	D5
3P11	E5
3P12	E2
3P13	F2
3P14	F5
3P15	G5
3P16	H5
3P17	G2
3P18	G2
3P19	G2
3P20	H1
3P21	C7
3P22	B10
3P23	B10
3P24	B11
3P25	D7
3P26	D7
3P27	E6
3P28	E6
3P29	E11
3P30	F9
3P31	F7
3P32	F7
3P34	G9
3P35	G9
3P36	H7
3P37	H7
3P38	H6
3P39	G7
3P40	F6
3P41	D13
3P42	D13
3P43	D13
3P44	F9
3P45	H11
3P46	H11
3P47	I12
3P48	B7
3P90	E12
3P91	E13
3P92	E14
3P93	E14
5P00	B2
5P01	B3
5P02	C1
5P03	B1
5P04	D3
5P05	E5
5P06	E6
5P07	H2
5P08	D6
5P09	B7
5P10	B7
6P00	E2
6P01	E2
6P02	G2
6P03	D2
7P00	D2
7P01	F2
7P02	H1
7P03	F5
7P04	G5
7P05	D6
7P06	E7
7P07	H7
7P08	F9
7P09	D9
7P10	D13
7P11	G11
9P00	B4
9P01	C3
9P02	D5
9P03	D6
9P04	E2
9P05	E5
9P06	E7
9P07	G7
9P08	G7
9P09	G6
9P10	F3
9P11	E3
9P12	G8
9P13	D11
9P14	G6
9P15	E7
9P16	E2
9P17	H7
9P18	G7
9P19	I6
9P20	F11
9P21	G11
9P22	G11
9P23	I6
9P24	G9
9P25	F9
9P26	E11
9P27	E11
9P28	F12
9P29	F13
AP02	C1
AP04	C4
AP05	C4
AP06	C5
AP07	C5
AP09	G3
FP02	B8
FP03	C1
FP08	B5
FP11	I7
FP12	H9
FP13	F7
FP14	E6
FP15	D7
FP16	D7
FP17	F7
FP23	B11
FP24	D12
FP25	D12
FP26	D12
FP27	D5
FP29	H11
FP36	G9
FP37	C12
FP38	C12
FP39	C12
FP40	C12
FP41	H8
FP42	H9
IP00	B5
IP01	E5
IP02	B5
IP03	E5
IP10	H8
IP17	C7
IP20	B8
IP21	B9
IP22	D5
IP23	B2
IP24	B3
IP25	B2
IP26	B4
IP27	B3
IP28	C3
IP29	C4
IP30	B3
IP31	B3
IP32	C3
IP33	B6
IP34	B7
IP35	B7
IP36	B10
IP37	H11
IP38	H11
IP39	H12
IP40	G13
IP41	G14
IP42	H13
IP43	H14
cP00	B8

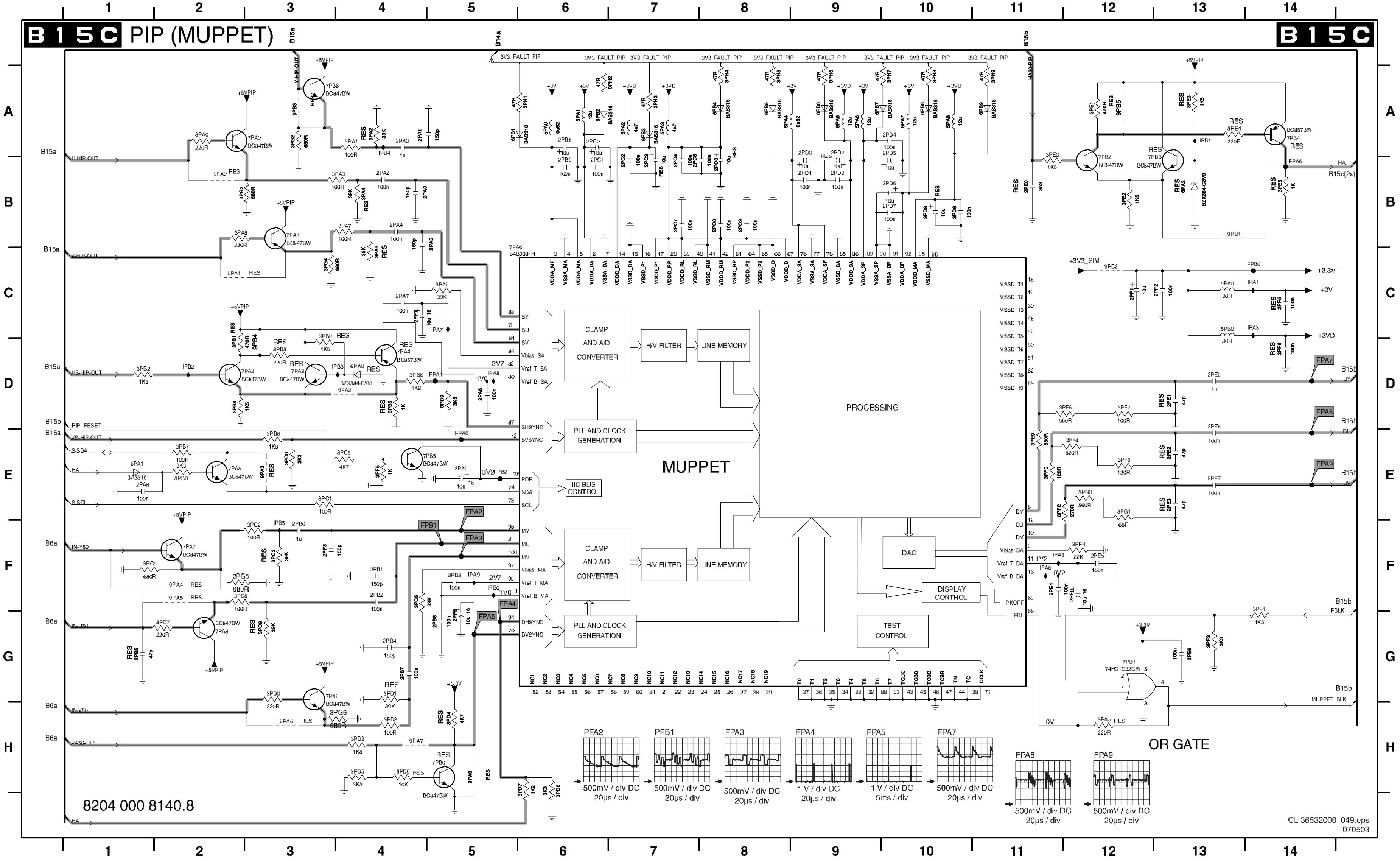
Small Signal Board: PIP-I/O

1P50	D2
2P50	D4
2P51	E1
2P52	E2
2P53	E2
2P54	F2
2P55	F2
2P56	G5
2P57	G5
2P58	F5
2P59	E5
2P60	E5
2P61	E6
2P62	F5
2P63	F10
2P64	F10
2P65	G9
2P66	H9
2P67	H9
2P68	H9
2P69	H9
2P70	D6
2P71	D15
2P72	D6
2P73	D8
2P74	C6
2P75	A8
2P76	D1
2P77	D4
2P78	E12
2P79	E12
2P80	E14
2P81	E14
2P82	G10
2P83	G10
2P84	F10
2P85	F10
2P86	A4
2P87	C2
2P88	C1
2P90	D5
3P50	D1
3P51	D1
3P52	D4
3P53	E2
3P54	F2
3P55	H5
3P56	G4
3P57	G5
3P58	G5
3P59	F5
3P60	F5
3P61	D7
3P62	G9
3P63	F9
3P64	F9
3P65	G15
3P66	G15
3P67	F14
3P68	F14
3P69	E14
3P70	E14
3P72	E14
3P74	D15
3P75	E5
3P76	F4
3P77	B3
3P78	B4
3P79	C4
3P80	C2
3P81	D4
3P82	C2
3P85	F14
3P86	B9
3P87	B9
3P88	D5
5P50	D4
5P51	E15
7P50	A3
7P51	C3
7P52	F4
7P53	G4
7P54	E6
7P55	B6
7P56	F13
7P57	A12
9P52	F4
9P53	G4
9P54	H5
9P55	C12
9P56	C12
9P57	D12
9P58	D11
9P59	C9
9P60	C8
9P63	B9
9P64	B9
9P65	C10
9P69	H13
9P70	H13
9P71	H13
FP50	D15
FP51	G10
FP52	F10
FP53	F10
FP54	D12
FP55	E15
FP56	B8
FP57	G6
FP59	F15
FP60	G10
IP50	C2
IP51	D3
IP52	F5
IP53	D2
IP54	D2
IP55	G5
IP56	D14
IP57	D7
IP58	D6
IP59	B8
IP60	C6
IP61	D8
IP62	C14


B15B
PIP-I/O
B15B
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H
+5VPIP
7P50 M24C32
NVM
E0 E1 E2 SCL WC VCC SDA VSS
RES 3P77 100R
RES 3P78 100R
S-SCL
S-SDA
USA ONLY
V-CHIP PROC.
7P51 Z86130
I2C-SEL HSEL XOUT SEN HIN-XIN SMS VIDEO CSYNC LPF
NC2 NC1 SDO SCK SDA VIN-INTRO VDD VSS RREF
1P50 DSX840 16M432
V-CHIP_IN
MONO FM AUDIO DEMODULATOR
7P55 TDA9820T/V1
7P55-M
7P55-BG
7P55-I
7P55-DK
B15A
7 STAGE LIMITER AMPLIFIER 1
7 STAGE LIMITER AMPLIFIER 2
VCO1
VCO2
CONTROL UNIT
SUPPLY
GND VP CSTAB VCOREF
VAF1
VAF2
S1 S2
SEL_PIP_SOUND1
SEL_PIP_SOUND2
MONO-PIP
PIP-CVBS-MON
SWITCH
7P57 74HC4053
VCC VEE GND
SUB-Y
SIF-OUT
SEL_PIP_CVBS_SOUND
V-CHIP_IN
MONO-PIP
SEL_PIP_SOUND1
SEL_PIP_SOUND2
SWITCH IIEF
PIP RESET
FBLK
SWITCH IIEF-SUB
S-SDA
S-SCL
7P56 M62320
I/O PORT
DATA LATCHES IN I/O OUT
RES PWR
REG SHIFT
TRANSCEIVER C BUS 2 I
CHIP SELECT
I/O EXPANDER
SWITCH
TDA8601T 7P54
DECODING
SELECTABLE CLAMP
3-STATE
VIDIa1 VIDIa2 VIDIb1 VIDIb2 VIDIc1 VIDIc2
SEL FBI1 FBI2
VIDOa VIDOb VIDOc FBO Vp GND IOCNTR
IN-Y50
IN-U50
IN-V50
MUPPET_BLK
Y-PIP+MAIN-OUT
U-PIP+MAIN-OUT
V-PIP+MAIN-OUT
BC847BW
V33
V34
V35
V36
V37
V38
V39
500mV / div DC 20µs / div
100mV / div DC 20µs / div
8204 000 8140.8
CL 36532008_048.eps 070503

Small Signal Board: PIP (Muppet)

2PA0	A4
2PA1	A4
2PA2	B4
2PA3	B4
2PA4	B4
2PA5	B5
2PA6	D5
2PA7	C4
2PA8	E1
2PA9	E5
2PB0	F3
2PB1	F4
2PB2	F4
2PB3	F5
2PB4	G4
2PB5	G1
2PB6	G5
2PB7	G4
2PB8	A6
2PB9	B6
2PC0	A6
2PC1	B6
2PC2	B7
2PC3	B7
2PC4	B7
2PC5	B7
2PC6	B8
2PC7	B7
2PC8	B8
2PC9	B8
2PD0	A9
2PD1	B9
2PD2	A9
2PD3	B9
2PD4	A10
2PD5	A10
2PD6	B10
2PD7	B10
2PD8	B10
2PD9	B10
2PE0	B11
2PE1	D13
2PE2	E13
2PE3	E13
2PE4	F11
2PE5	F12
2PE6	G13
2PE7	E13
2PE8	D13
2PE9	D13
2PF1	C12
2PF2	C13
2PF3	F3
2PF5	C14
2PF6	D14
2PF7	C4
2PF8	G5
2PF9	F12
3PA0	A2
3PA1	A4
3PA2	A4
3PA3	B4
3PA4	B4
3PA5	H12
3PA6	C4
3PA7	B4
3PA8	B2
3PA9	C5
3PB0	C3
3PB1	D2
3PB2	D1
3PB3	D3
3PB4	D2
3PB5	D4
3PB6	D4
3PB7	E2
3PB8	E3
3PB9	E2
3PC0	E3
3PC1	E3
3PC2	F3
3PC3	F3
3PC4	F1
3PC5	E4
3PC6	F4
3PC7	G2
3PC8	F2
3PC9	G3
3PD0	G3
3PD1	G4
3PD2	H4
3PD3	H4
3PD4	H5
3PD5	H4
3PD6	H4
3PD7	H6
3PD8	H6
3PD9	D5
3PE0	A11
3PE1	A12
3PE2	B12
3PE3	A13
3PE4	A13
3PE5	B14
3PE9	E11
3PF0	E11
3PF1	F14
3PF2	E11
3PF3	G13
3PF4	F12
3PF5	E4
3PF6	D12
3PF7	D12
3PF8	E12
3PF9	E12
3PG0	E12
3PG1	E12
3PG2	A3
3PG3	B2
3PG4	C3
3PG5	F2
3PG6	H4
3PH1	A6
3PH2	A6
3PH3	A7
3PH4	A8
3PH5	A8
3PH6	A9
3PH7	A10
3PH8	A10
3PH9	A11
5PA0	A6
5PA1	A6
5PA2	A7
5PA3	A7
5PA4	A8
5PA5	A9
5PA6	A9
5PA7	A10
5PA8	A10
5PA9	C13
5PB0	C13
6PA0	D4
6PA1	E1
6PA2	B13
6PB1	A5
6PB2	A6
6PB3	A7
6PB4	A8
6PB5	A8
6PB6	A9
6PB7	A9
6PB8	A10
6PB9	A11
7PA0	A3
7PA1	B3
7PA2	D2
7PA3	D3
7PA4	D4
7PA5	E2
7PA6	C5
7PA7	F2
7PA8	G2
7PA9	G3
7PB0	H5
7PB1	G12
7PB2	B12
7PB3	B13
7PB4	A14
7PB5	E4
7PB6	A3
9PA0	B2
9PA1	C3
9PA2	D4
9PA3	E3
9PA4	F2
9PA5	F2
9PA6	H3
9PA7	H4
9PA8	H5
9PB1	B13
9PB2	C12
9PB3	A3
9PB4	D3
9PB5	A12
FPA0	E5
FPA1	D5
FPA2	F5
FPA3	F5
FPA4	G5
FPA5	G5
FPA6	B14
FPA7	D14
FPA8	D14
FPA9	E14
FPB0	C14
FPB1	F5
FPB2	E5
IPA1	C14
IPA3	C14
IPA5	F11
IPA6	F11
IPA7	C5
IPA8	D5
IPA9	F5
IPB0	F5
IPB1	A13
IPB2	D2
IPB3	D4
IPB4	A4
IPB5	F3


B15C
PIP (MUPPET)
B15a
B14a
B15b
3V3_FAULT_PIP
+5VPIP
+3V
+3VD
+3V3_SIM
+3.3V
H-HIP-OUT
V-HIP-OUT
HS-HIP-OUT
PIP_RESET
VS-HIP-OUT
S-SDA
HA
S-SCL
IN-Y50
IN-U50
IN-V50
VA50-PIP
HA50-PIP
B6a
7PA6
SAA4991H
CLAMP AND A/D CONVERTER
H/V FILTER
LINE MEMORY
PLL AND CLOCK GENERATION
IIC BUS CONTROL
PROCESSING
MUPPET
DAC
DISPLAY CONTROL
TEST CONTROL
SY
SU
SV
Vbias SA
Vref T SA
Vref B SA
SHSYNC
SVSYNC
POR
SDA
SCL
MY
MU
MV
Vbias MA
Vref T MA
Vref B MA
DHSYNC
DVSYNC
DY
DU
DV
Vbias DA
Vref T DA
Vref B DA
PKOFF
FBL
BC847BW
BC857BW
BAS316
BZX384-C3V9
BZX384-C3V0
7PB1
74HC1G32GW
OR GATE
DY
DU
DV
FBLK
MUPPET_BLK
RES
FPA2
FPB1
FPA3
FPA4
FPA5
FPA7
FPA8
FPA9
500mV / div DC
20µs / div
1 V / div DC
5ms / div
8204 000 8140.8
CL 36532008_049.eps
070503
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H

Layout Small Signal Board (Overview Top Side)

1001	C7
1304	A6
1305	C5
1306	C5
1307	B5
1308	C5
1401	B6
1402	A7
1403	B4
1408	B5
1701	D6
1702	D6
1F01	D7
1I01	A6
1I02	F3
1I03	A2
1I04	A4
1I05	A8
1I06	A7
1I07	A7
1I08	A2
1I11	B3
1I13	B3
1I14	B3
1I70	F5
1P00	D2
1P01	D2
1P02	C2
1P03	D2
1P06	C2
1P10	C2
1P11	C2
1P12	D2
1S02	E1
1S15	C1
1T01	A2
1T02	B1
1U01	F6
1U02	F6
2002	C7
2004	C7
2005	C7
2006	C7
2007	C7
2008	C7
2009	D6
2011	D6
2012	C6
2014	C7
2016	B7
2018	C7
2020	D7
2025	B6
2027	D6
2028	C6
2029	D6
2031	B6
2034	B6
2035	C5
2037	B6
2039	C6
2058	B7
2059	B7
2067	C6
2070	D6
2071	D6
2073	D6
2301	D5
2305	C4
2314	C5
2315	C5
2316	C5
2317	C5
2318	C5
2322	C5
2324	D4
2327	B5
2329	D5
2330	D5
2331	D5
2332	C5
2333	D5
2334	D5
2336	D5
2339	B5
2340	D5
2344	B6
2347	B6
2348	B5
2349	B5
2350	C4
2351	C4
2352	C4
2353	C4
2355	B5
2356	C5
2357	C5
2358	C5
2359	C5
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2361	C5
2362	C5
2363	C5
2364	B5
2365	B4
2367	C4
2368	C4
2373	C4
2376	C5
2377	C5
2379	B5
2380	B5
2381	B5
2382	B5
2383	B5
2388	C4
2389	C4
2391	B4
2393	C4
2394	C5
2395	C5
2396	C5
2397	C5
2398	D5
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2403	C4
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2407	B5
2408	B5
2409	B5
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2412	B5
2413	B4
2414	D4
2415	C4
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2425	D4
2427	B5
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2429	D5
2432	C5
2433	C4
2709	C8
2710	C7
2711	C7
2716	C7
2718	D6
2719	D6
2720	D6
2721	E5
2722	D5
2729	E7
2735	B7
2740	E6
2741	E6
2742	E6
2743	E6
2744	E6
2745	E6
2752	E6
2754	B8
2758	E6
2759	E6
2763	E7
2764	E6
2767	E7
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2771	D6
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2774	B8
2776	D8
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2782	D7
2783	B7
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2793	D7
2794	D7
2796	D8
2797	D7
2798	D8
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2804	C7
2805	C8
2806	B7
2807	B8
2808	B8
2809	C8
2811	C8
2813	C8
2814	B7
2817	C8
2819	C8
2823	E5
2825	C8
2829	C7
2831	E6
2838	D7
2840	C7
2843	C7
2845	C8
2846	C8
2848	C8
2855	C7
2859	B7
2860	B7
2861	C8
2866	B7
2867	C7
2870	F6
2874	E7
2877	F5
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2891	B7
2892	B7
2893	C7
2894	B7
2895	B7
2896	C7
2897	C7
2898	C7
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2A02	E5
2A03	F4
2A04	F4
2A06	D4
2A08	D4
2A09	E5
2A10	E4
2A11	E4
2A12	F5
2A13	F5
2A14	E5
2A15	D5
2A16	E5
2A17	D4
2A18	D4
2A20	E5
2A21	D5
2A22	E4
2A23	E4
2A25	E4
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2A27	E5
2A29	E5
2A30	E4
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2A57	F4
2A58	E4
2A59	E5
2A60	F4
2A61	F5
2A62	E5
2A63	F5
2A65	D4
2A66	E4
2A67	E5
2A68	E4
2A71	E5
2A73	E4
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2A78	F5
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2A87	F5
2A95	F4
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2AA1	E4
2AA6	E5
2AA7	E5
2AA8	E4
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2AB5	D5
2AB6	E5
2AB7	E5
2AB9	E4
2AC0	E4
2AC1	F3
2AC2	E3
2AC3	E3
2AC4	E3
2AC5	E3
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2AE5	E3
2AF2	D4
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2AF4	F3
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2AK2	E5
2AK3	E5
2AK4	E5
2AK5	E5
2AK6	F5
2AK7	F5
2AK9	F5
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2AL2	E5
2AL3	E5
2AL4	E5
2AL5	F5
2AL6	F5
2AL8	F4
2AL9	F4
2ALA	E5
2AM0	E4
2AM1	E4
2AM2	F4
2AM3	E5
2AM5	E4
2AM6	F4
2AM7	E5
2AM8	F5
2AM9	F4
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2AN1	E4
2AN7	E5
2AN9	E5
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2H02	E1
2H03	E1
2H04	E1
2H05	E1
2H06	E1
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2H10	E1
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2H33	F2
2H34	F1
2H35	F2
2H38	E2
2H40	F2
2H42	F2
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2H44	F2
2H45	E2
2H46	E3
2H51	E2
2H52	E2
2H53	E2
2H54	E2
2H55	E2
2H56	E2
2H57	E3
2H58	E2
2H59	E2
2H60	E2
2H82	E2
2H88	E1
2H95	E1
2I01	B2
2I02	B3
2I03	B3
2I05	B3
2I09	A7
2I28	A8
2I32	A8
2I41	A2
2I42	A2
2I45	A2
2I48	B8
2I49	B8
2I59	B8
2I60	B8
2I61	A7
2I62	A7
2I63	A8
2I71	A3
2I72	A3
2I73	A3
2I74	A3
2I75	A3
2I76	B3
2I77	A2
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2I82	A2
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2I95	A2
2I96	A2
2I97	A2
2I98	A2
2IA6	C3
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2IB2	B5
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2IB7	A8
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2IC8	A3
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2IE5	A8
2IE6	B8
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2IJ6	C2
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2P04	C2
2P05	C1
2P06	C2
2P07	C2
2P08	C2
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2P13	C1
2P17	C2
2P19	C2
2P20	C2
2P21	C2
2P22	C2
2P26	D1
2P27	D1
2P28	D1
2P34	D2
2P35	D2
2P36	D2
2P37	D2
2P38	D2
2P39	D2
2P40	D2
2P41	C2
2P42	C2
2P44	D2
2P50	C2
2P80	C3
2P81	C3
2P86	D2
2P90	C3
2P98	D2
2P99	D2
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2PA5	D3
2PA6	D3
2PA7	D3
2PA8	D2
2PB3	D3
2PB4	D3
2PB5	C3
2PB6	D3
2PB7	D3
2PB8	C3
2PB9	D3
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2PC1	D3
2PC2	C3
2PC3	C3
2PC4	C3
2PC5	C3
2PC6	C3
2PC7	C2
2PC8	C2
2PC9	C3
2PD1	D3
2PD2	D3
2PD3	D3
2PD4	D3
2PD5	D3
2PD6	D3
2PD7	D3
2PD8	D3
2PD9	D3
2PE0	D3
2PE1	D3
2PE2	D3
2PE3	D3
2PE4	C3
2PE5	D3
2PE6	C2
2PE7	D3
2PE8	D3
2PF1	C3
2PF3	D3
2PF8	D3
2PF9	D3
2S03	D4
2S04	D4
2S05	D4
2T12	B2
2U03	F8
2U04	F8
2U05	F8
2U07	F8
2U09	F7
2U11	F7
2U12	F7
2U13	F7
2U14	F8
2U15	F7
2U16	F8
2U17	F7
2U18	F8
2U20	F6
2U21	F8
2U23	F8
2U31	F8
2U32	F8
3003	C7
3006	B2
3011	D6
3012	C6
3018	D6
3019	D6
3020	D6
3021	D6
3024	D6
3025	D7
3026	D7
3027	D6
3033	D7
3035	C5
3039	D7
3047	B7
3058	D6
3059	D6
3065	B6
3066	B6
3068	D6
3073	D6
3074	D6
3075	D6
3076	D6
3077	D6
3078	D6
3080	D6
3084	B6
3089	B6
3090	D6
3091	B6
3099	D6
3301	C4
3302	D5
3304	D5
3306	D4
3317	C4
3318	C5
3320	C5
3321	C5
3322	D4
3329	D4
3330	D5
3332	C5
3335	C5
3336	D4
3340	C4
3341	C4
3342	C4
3343	D4
3344	D4
3345	D4
3346	D4
3347	D4
3348	D4
3349	C5
3353	D4
3361	D5
3363	C5
3370	C4
3371	C4
3372	C4
3373	B5
3374	B5
3375	B5
3376	C5
3377	C5
3379	B5
3381	B5
3387	C5
3388	D4
3390	D4
3393	C5
3394	C5
3395	D5
3396	C5
3397	C5
3398	C5
3399	D4
3400	C5
3402	C4
3404	B4
3406	B5
3409	B5
3411	B5
3412	D5
3416	B4
3418	B5
3423	B4
3433	B5
3436	B4
3437	B5
3439	B4
3442	C4
3443	C4
3444	C4
3447	C4
3448	C4
3449	C5
3460	C5
3461	C5
3462	C5
3472	D4
3473	C5
3474	C4
3475	C4
3476	C4
3713	D5
3714	D6
3715	D5
3716	D6
3717	D6
3718	D5
3719	E6
3720	E6
3725	E6
3726	E5
3727	E6
3728	E5
3730	E5
3736	E6
3737	E6
3738	E6
3739	E6
3740	E7
3741	E7
3742	E7
3743	E7
3744	E6
3745	E6
3746	E7
3747	E6
3748	E6
3749	E6
3750	E7
3751	E6
3752	E6
3753	E6
3754	E6
3755	E6
3756	E6
3760	E6
3762	E7
3763	E7
3772	C8
3773	E7
3774	E7
3781	E7
3782	E7
3783	E7
3793	E6
3800	C7
3801	B7
3802	B7
3803	C7
3811	C7
3812	C7
3814	C7
3815	C7
3817	B7
3818	C7
3819	B7
3820	C7
3821	C7
3822	C7
3823	C7
3824	C7
3825	C7
3826	B7
3827	B7
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3833	E6
3835	F6
3836	E7
3838	D8
3839	E7
3840	D7
3841	C8
3842	C7
3843	D6
3844	E6
3A00	D5
3A01	E5
3A02	E5
3A03	D4
3A05	F5
3A06	F5
3A08	E5
3A09	D5
3A11	E5
3A12	E5
3A13	E4
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3A18	E4
3A20	E4
3A21	E4
3A22	E4
3A23	E4
3A25	E4
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3A27	E4
3A28	E4
3A29	E4
3A31	E5
3A32	E4
3A33	E4
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3A36	F4
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3A39	F5
3A3A	F5
3A3B	F5
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3A3F	E4
3A40	E4
3A41	E4
3A42	E4
3A43	F5
3A44	F5
3A50	D4
3A54	E4
3A66	E4
3A70	F5
3A71	F5
3A74	E3
3A81	F3
3A82	F3
3A83	F3
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3AA1	E5
3AA4	E4
3AA5	F4
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3AA7	F4
3AA9	F4
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3AB2	E4
3AB3	F4
3AB5	F4
3AB6	E4
3AB7	F4
3AB8	E4
3AB9	E4
3AC8	E5
3C01	B6
3C03	B6
3C06	B6
3C07	B5
3C08	B6
3C09	D6
3H06	E1
3H07	F2
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3H29	F1
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3H38	E2
3H39	E2
3H41	E2
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3H76	E2
3H80	E2
3H81	E2
3H83	E2
3H84	E2
3H85	E2
3H92	E2
3H93	E3
3H94	E2
3H95	E2
3H96	F2
3H98	E2
3HA1	E1
3HA2	E1
3HA3	E1
3HA4	E1
3HA5	E1
3HA6	E1
3HA7	E1
3HA8	E2
3HA9	E1
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3HF6	E3
3HF7	E3
3HF8	E3
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3HG2	E2
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3HH2	E2
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3HH6	F2
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3HH8	F2
3HH9	F2
3HI1	F2
3HI2	F2
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3I18	B3
3I21	B3
3I22	B3
3I23	B3
3I24	B3
3I25	B3
3I94	A8
3I95	A8
3I99	A8
3IA4	A5
3IA5	A5
3IA6	A8
3IA7	A8
3IA8	A8
3IA9	A8
3IB0	A8
3IC0	A2
3IC9	A2
3ID3	A2
3IG7	A8
3IG8	A7
3IG9	A7
3IH0	A7
3IH1	B8
3IH2	B8
3IH3	B8
3IH4	B8
3II8	B2
3II9	B2
3IJ0	A3
3IJ1	A3
3IK0	B2
3IK8	B3
3IL0	B4
3IL1	B4
3IL2	B4
3IL3	B5
3IL4	B5
3IL5	B4
3IL6	B4
3IM4	B5
3IM5	B5
3IM6	B5
3IM7	B5
3IM8	B5
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3IN7	A5
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3IP2	C2
3IP3	A5
3IP4	C2
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3IP6	B3
3IP7	B3
3IP9	A3
3IQ0	A5
3IQ1	A5
3IS0	A3
3IS1	A3
3IS8	A2
3IS9	A2
3IT1	A8
3IT3	A8
3IT4	A8
3IT5	A3
3IT6	A3
3P00	C1
3P01	D2
3P02	D2
3P07	C2
3P08	C2
3P10	C1
3P17	C2
3P18	C2
3P19	C2
3P20	C2
3P25	C2
3P26	C2
3P27	C2
3P28	C1
3P29	D2
3P30	D1
3P34	D1
3P35	D1
3P41	D2
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3P78	D2
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3PA2	D2
3PA3	D3
3PA4	D3
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3PA7	D3
3PA8	D3
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3PD6	C2
3PD8	D2
3PD9	D3
3PE0	D2
3PE1	D2
3PE2	D3
3PE3	D2
3PE4	D2
3PE5	D2
3PE9	D3
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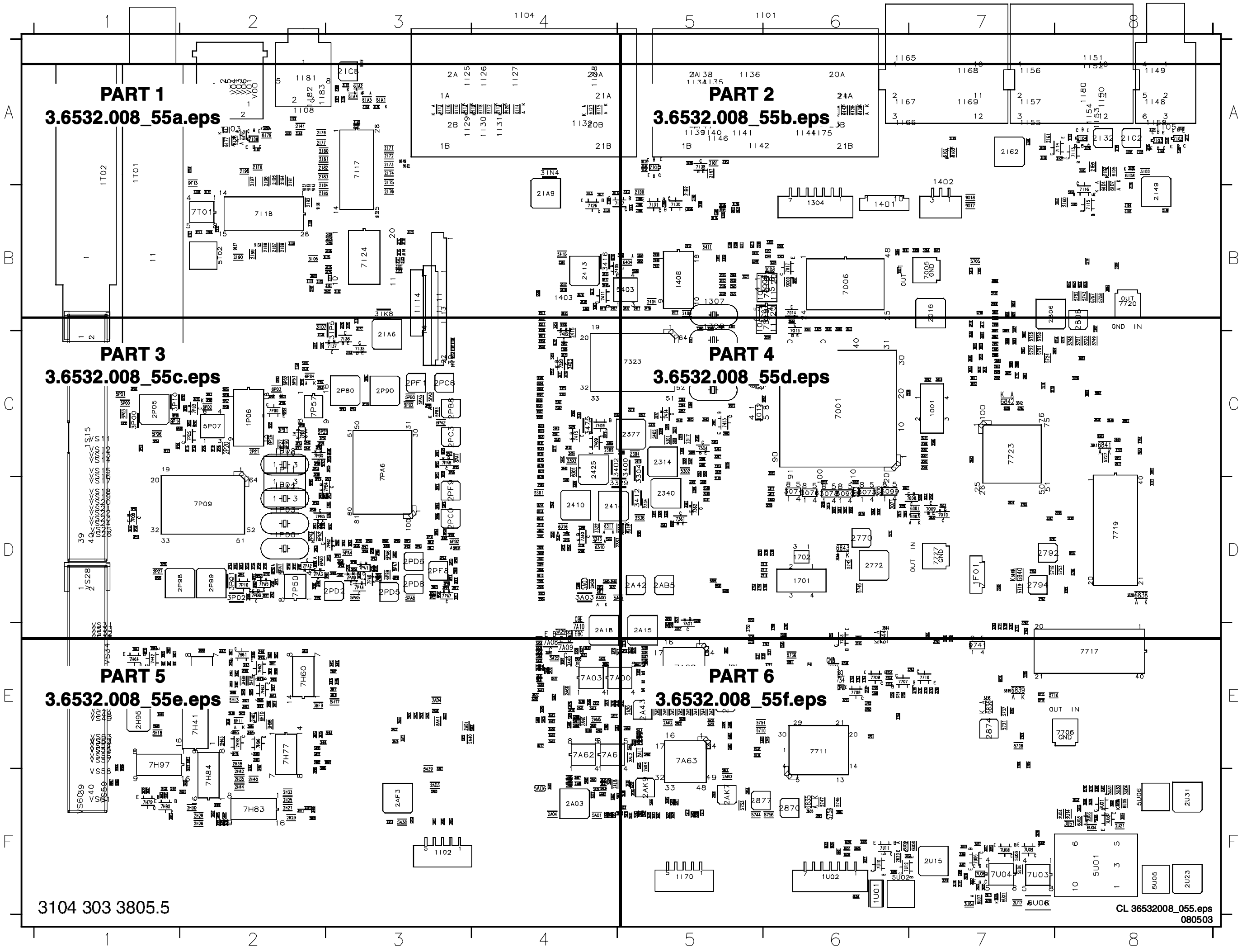
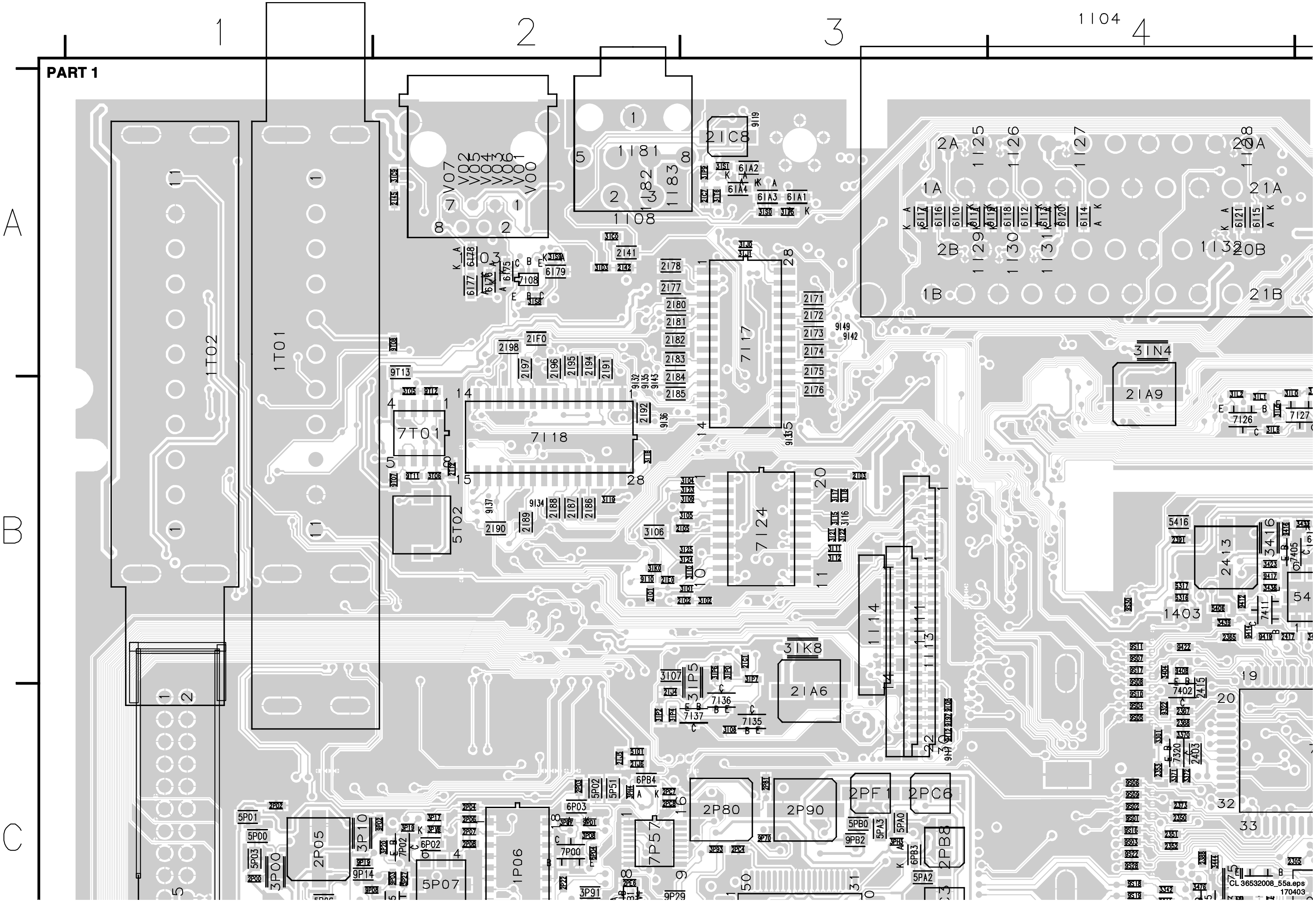
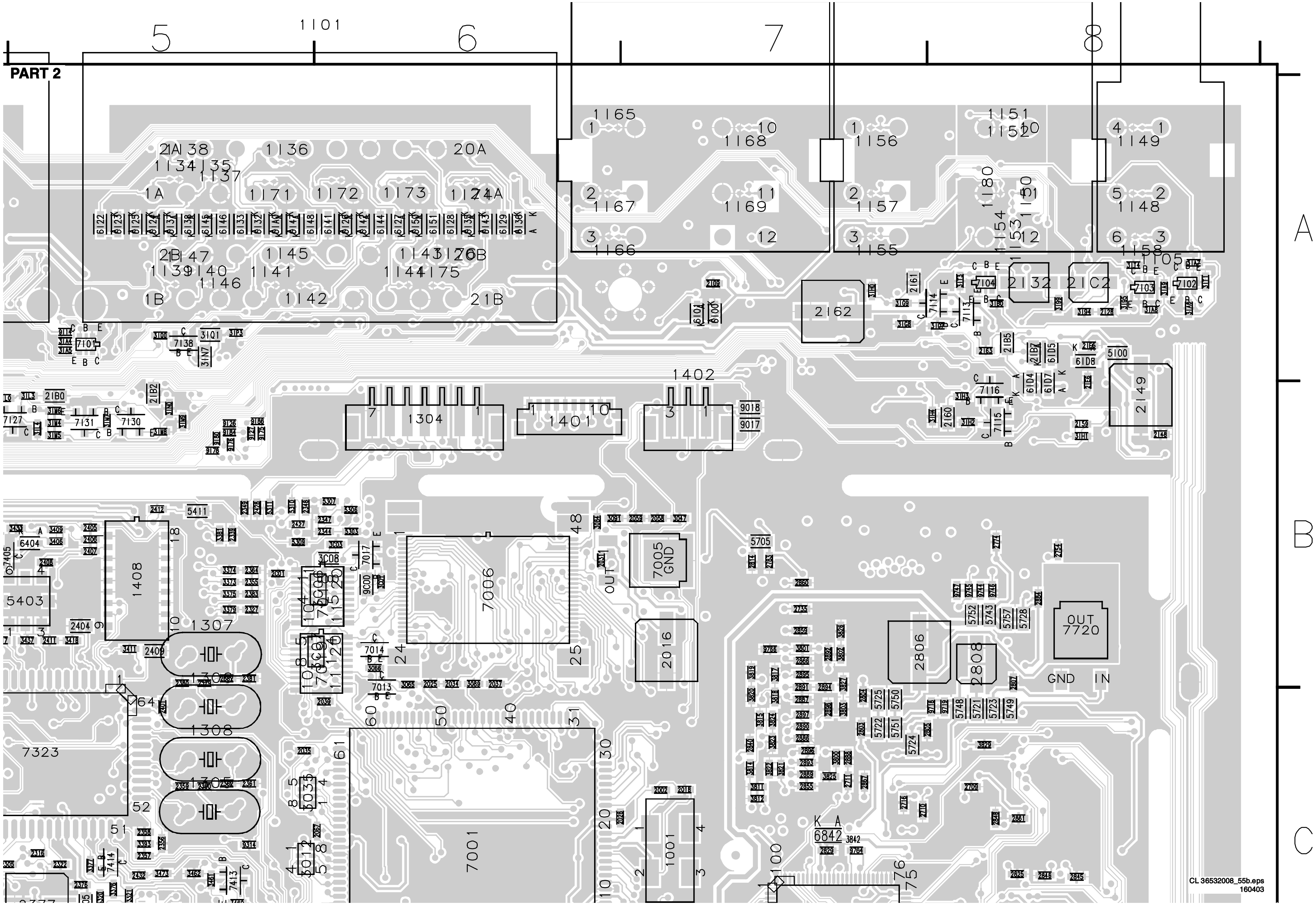
3PF1	C2
3PF2	D3
3PF3	C2
3PF4	D3
3PF6	D3
3PF7	D3
3PF8	D3
3PF9	D3
3PG0	D3
3PG2	D2
3PG3	D3
3PG4	D3
3PG5	C3
3PG6	D3
3PH2	D3
3PH3	C3
3PH4	C2
3PH8	D3
3S01	D4
3S02	D4
3S03	D4
3S04	D4
3S05	D4
3S06	D4
3S07	D4
3S08	D4
3S09	D4
3S10	D4
3T05	B2
3T06	B2
3U01	F7
3U02	F8
3U03	F8
3U04	F8
3U05	F8
3U06	F7
3U07	F7
3U08	F7
3U09	F8
3U10	F7
3U11	F8
3U13	F7
3U14	F8
3U15	F7
3U16	F7
3U17	F7
3U18	F7
3U19	F7
3U20	F7
3U21	F6
3U22	F7
3U23	F7
3U25	F6
3U26	F6
3U28	F7
3U29	F8
3U30	F8
3U31	F8
3U34	F6
3U46	F7
3U51	F8
5301	C5
5302	C5
5303	B6
5306	B6
5307	B6
5309	B5
5310	B5
5311	B5
5316	B4
5317	B4
5403	B5
5405	C5
5406	B4
5411	B5
5416	B4
5705	B7
5706	E7
5710	E5
5716	E7
5718	D7
5719	D7
5721	C8
5722	C7
5723	C8
5724	C7
5725	C7
5727	C8
5728	B8
5731	E7
5733	F5
5736	E6
5737	E7
5742	D6
5743	B8
5744	F5
5745	D6
5746	F6
5747	F6
5748	C8
5749	C8
5750	C7
5751	C7
5752	B8
5753	D8
5754	E5
5756	F6
5757	B8
5759	F6
5A00	D5
5A01	F4
5A03	D4
5A06	F4
5A16	E4
5A17	E4
5A18	E4
5A19	E5
5A23	E4
5A24	E4
5A37	D4
5A38	F3
5A39	F3
5A40	E3
5A41	E3
5A60	E4
5A61	F5
5A62	F4
5A63	F4
5A67	E5
5H12	E1
5H13	E2
5H16	E2
5H17	E3
5H18	E1
5I00	A8
5I01	C2
5P00	C1
5P01	C1
5P02	C2
5P03	C1
5P04	C2
5P06	C1
5P07	C2
5P51	C2
5PA0	C3
5PA1	C3
5PA2	C3
5PA3	C3
5PA4	D3
5PA5	D3
5PA6	D3
5PA7	D3
5PA8	D3
5PB0	C3
5S01	D4
5T02	B2
5U01	F8
5U02	F7
5U03	F7
5U04	F7
5U05	F8
5U06	F8
6001	D7
6003	D7
6301	C4
6309	D5
6310	D4
6311	D4
6316	D4
6319	D5
6404	B5
6833	E6
6835	F6
6836	E7
6838	D8
6839	E7
6840	D7
6841	C8
6842	C7
6843	D6
6844	E6
6A00	D4
6H10	E2
6H11	E2
6I00	A7
6I01	A7
6I10	A3
6I11	A3
6I12	A4
6I13	A4
6I14	A4
6I15	A4
6I16	A3
6I17	A3
6I18	A4
6I19	A4
6I20	A4
6I21	A4
6I22	A5
6I23	A5
6I24	A5
6I25	A5
6I26	A6
6I27	A6
6I28	A6
6I29	A6
6I32	A5
6I33	A5
6I35	A6
6I36	A6
6I37	A5
6I38	A5
6I41	A5
6I42	A6
6I43	A6
6I44	A6
6I45	A5
6I46	A5
6I47	A5
6I48	A6
6I50	A6
6I51	A6
6I75	A2
6I76	A2
6I77	A2
6I78	A2
6I79	A2
6IA0	A5
6IA1	A3
6IA2	A3
6IA3	A3
6IA4	A3
6ID4	B8
6ID5	A8
6ID7	B8
6ID8	A8
6P02	C2
6P03	C2
6PA0	D3
6PA1	D2
6PA2	D3
6PB2	D3
6PB3	C3
6PB4	C2
6PB8	D3
6U01	F7
6U03	F8
6U04	F8
6U05	F8
6U06	F7
6U07	F7
6U08	F7
6U09	F7
7001	C6
7005	B7
7006	B6
7008	D7
7009	D7
7010	D7
7013	C6
7014	B6
7017	B6
7018	B6
7019	B6
7304	C5
7320	C4
7323	C4
7340	D4
7361	D5
7362	D5
7402	B4
7405	B5
7408	C4
7409	C4
7411	B4
7413	C5
7414	C5
7415	C4
7706	E8
7707	E6
7708	E6
7709	E6
7710	E7
7711	E6
7715	E6
7717	E8
7719	D8
7720	B8
7723	C7
7725	E6
7727	D7
7734	E6
7735	E6
7A00	E5
7A01	D5
7A02	E5
7A03	E4
7A08	E4
7A09	E4
7A10	D4
7A61	E4
7A62	E4
7A63	F5
7H40	E2
7H41	E1
7H42	E1
7H43	E1
7H60	E2
7H61	E2
7H62	E2
7H63	E2
7H64	E1
7H77	E2
7H78	E2
7H79	F1
7H80	F1
7H83	F2
7H84	F2
7H96	E2
7H97	F1
7I01	A5
7I02	A8
7I03	A8
7I04	A8
7I08	A2
7I13	A8
7I14	A8
7I15	B8
7I16	A8
7I17	A3
7I18	B2
7I24	B3
7I26	B4
7I27	B5
7I30	B5
7I31	B5
7I35	C3
7I36	C3
7I37	C3
7I38	A5
7P00	C2
7P02	C2
7P05	C2
7P08	D1
7P09	D2
7P10	D2
7P50	D2
7P57	C3
7PA0	D3
7PA1	D3
7PA2	D2
7PA3	D2
7PA4	D3
7PA5	D2
7PA6	C3
7PA7	D3
7PA8	C3
7PA9	D3
7PB0	C2
7PB1	C2
7PB2	D3
7PB3	D2
7PB4	D2
7PB6	D2
7T01	B2
7U01	F8
7U02	F8
7U03	F7
7U04	F7
7U05	F7
7U06	F7
7U08	F7
7U09	F7
7U10	F6
7U11	F6
7U12	F7
9016	D6
9017	B7
9018	B7
9302	D5
9303	D5
9304	D5
9305	D5
9314	C5
9315	C5
9322	C4
9408	B4
9412	B4
9414	B4
9416	B4
9417	B4
9419	B4
9422	B4
9700	E6
9703	E6
9705	E7
9706	E7
9714	E7
9715	E7
9718	C8
9719	C8
9720	E7
9721	D8
9727	D8
9728	D8
9729	E7
9730	E5
9731	E5
9736	E6
9737	E6
9738	E6
9740	E7
9741	E7
9744	B8
9745	B8
9746	B8
9747	B8
9750	E7
9762	C8
9763	C8
9764	C7
9765	D7
9766	B7
9A04	D5
9A05	D5
9A06	D5
9A38	F3
9A60	E5
9A61	E5
9A65	E4
9C00	B6
9I08	C3
9I10	B2
9I12	C3
9I14	A5
9I17	C3
9I19	A3
9I26	B5
9I27	B5
9I32	B2
9I33	B3
9I34	B2
9I35	B2
9I36	B2
9I37	B2
9I42	A3
9I43	B2
9I49	A3
9I75	B5
9I76	B5
9I78	B5
9I80	B5
9I84	B5
9I86	B5
9I97	C3
9P01	C2
9P02	C2
9P03	C2
9P06	C1
9P08	C1
9P13	D2
9P14	C1
9P15	C2
9P19	C1
9P26	C2
9P27	C2
9P29	C2
9P70	C3
9PA0	D3
9PA1	D3
9PA2	D3
9PA3	D2
9PA4	D3
9PA5	C3
9PA6	D3
9PA7	C2
9PA8	C3
9PB1	D2
9PB2	C3
9PB3	D2
9PB4	D3
9PB5	D2
9S01	C4
9S02	C4
9S03	C4
9S04	C4
9S05	C4
9S06	C4
9S07	B4
9S08	B4
9S09	C4
9S10	C4
9S11	B4
9S12	D4
9S13	D4
9S14	D4
9S15	D4
9S16	C4
9S17	B4
9S18	C4
9S19	C4
9S20	C4
9S21	C4
9S22	C4
9S23	C4
9S24	C4
9S25	C4
9S26	C4
9S27	C4
9S28	C4
9S29	D4
9S30	B4
9S66	F1
9S67	F1
9S68	E1
9S69	E1
9T07	B2
9T08	A2
9T11	B2
9T12	B2
9T13	A2
9U01	F6
9U02	F6
9U03	F6
9U04	F6
9U05	F6
9U06	F6
9U07	F6
9U08	F6



Layout Small Signal Board (Part 1 Top Side)

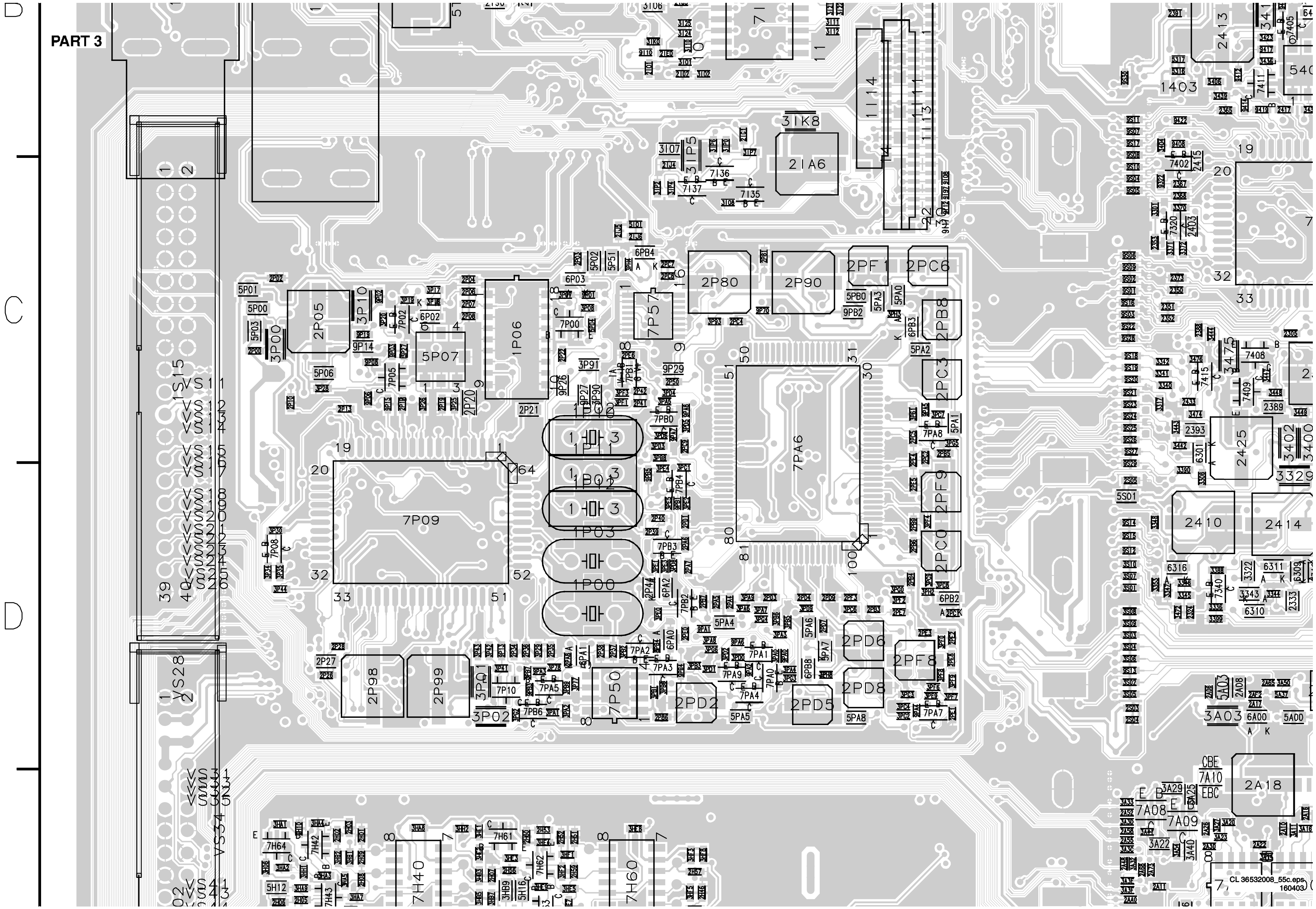

1
2
3
4
1104
A
B
C
PART 1
1T02
1T01
1181
1108
1183
21C8
1125
1126
1127
1128
1129
1130
1131
1132
2A
1A
2B
1B
20A
21A
20B
21B
7117
7118
7T01
5T02
7124
7108
3IN4
21A9
7126
7127
3IK8
21A6
7136
7137
7135
1114
1113
2413
1403
7402
7320
2403
2P80
2P90
2PF1
2PC6
2PB8
2P05
3P10
3P00
1P06
5P07
7P57
7P00
7P02
6P02
6P03
6PB4
5PB0
9PB2
5PA3
5PA0
6PB3
5PA2
9P14
3P91
9P29
CL 36532008_55a.eps
170403

Layout Small Signal Board (Part 2 Top Side)

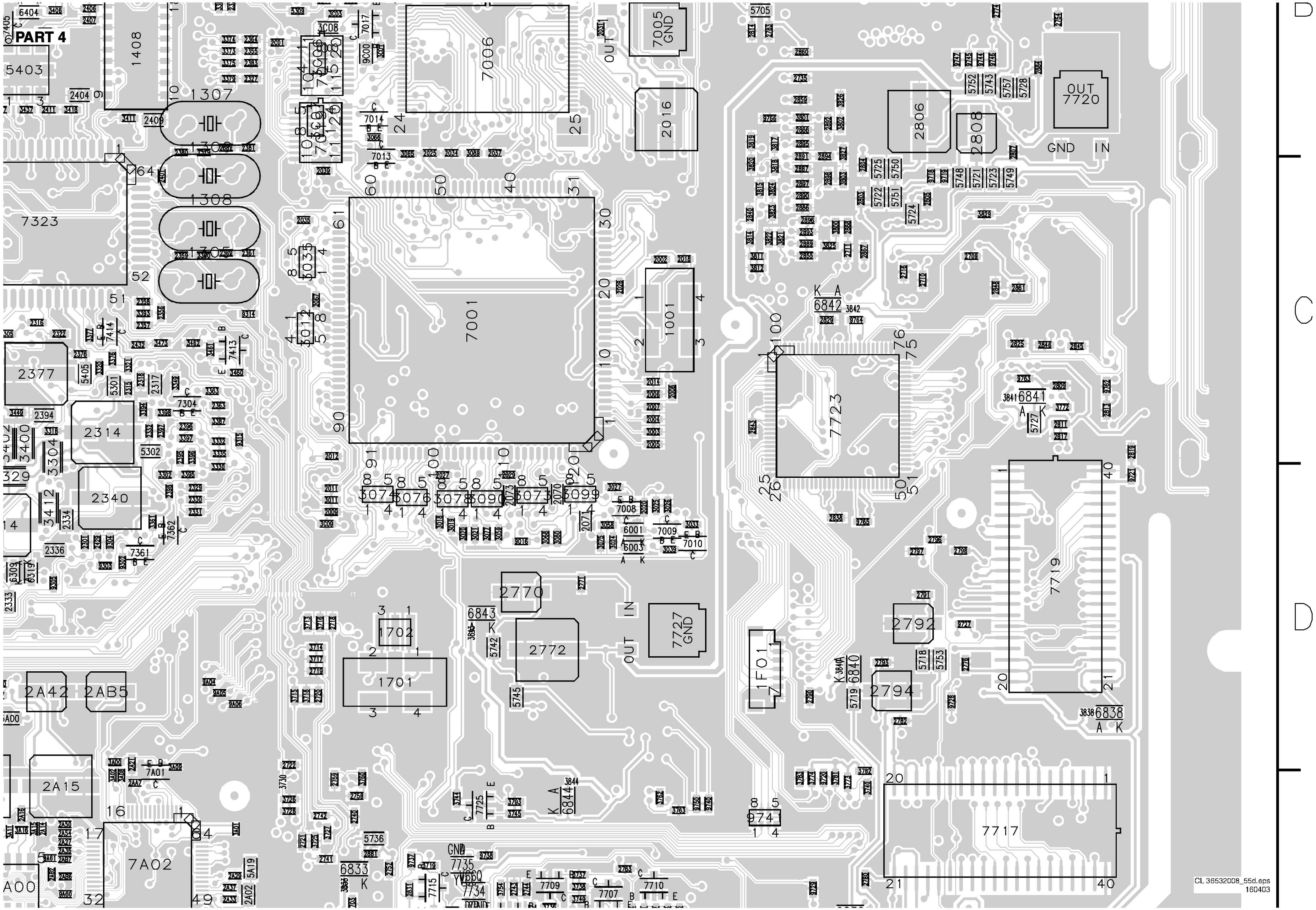

PART 2
5
6
7
8
A
B
C
1101
1165
1168
1167
1169
1166
1156
1157
1155
1151
1152
1149
1148
1136
1171
1172
1173
1145
1141
1142
1146
1137
1304
1401
1402
9018
9017
2162
2132
21C2
2149
5100
1408
5403
7006
7005
GND
OUT
2016
1307
1308
1305
7323
7001
1001
2806
2808
OUT
7720
GND
IN
6842
3042
5705
5411

CL 36532008_55b.eps
160403

Layout Small Signal Board (Part 3 Top Side)

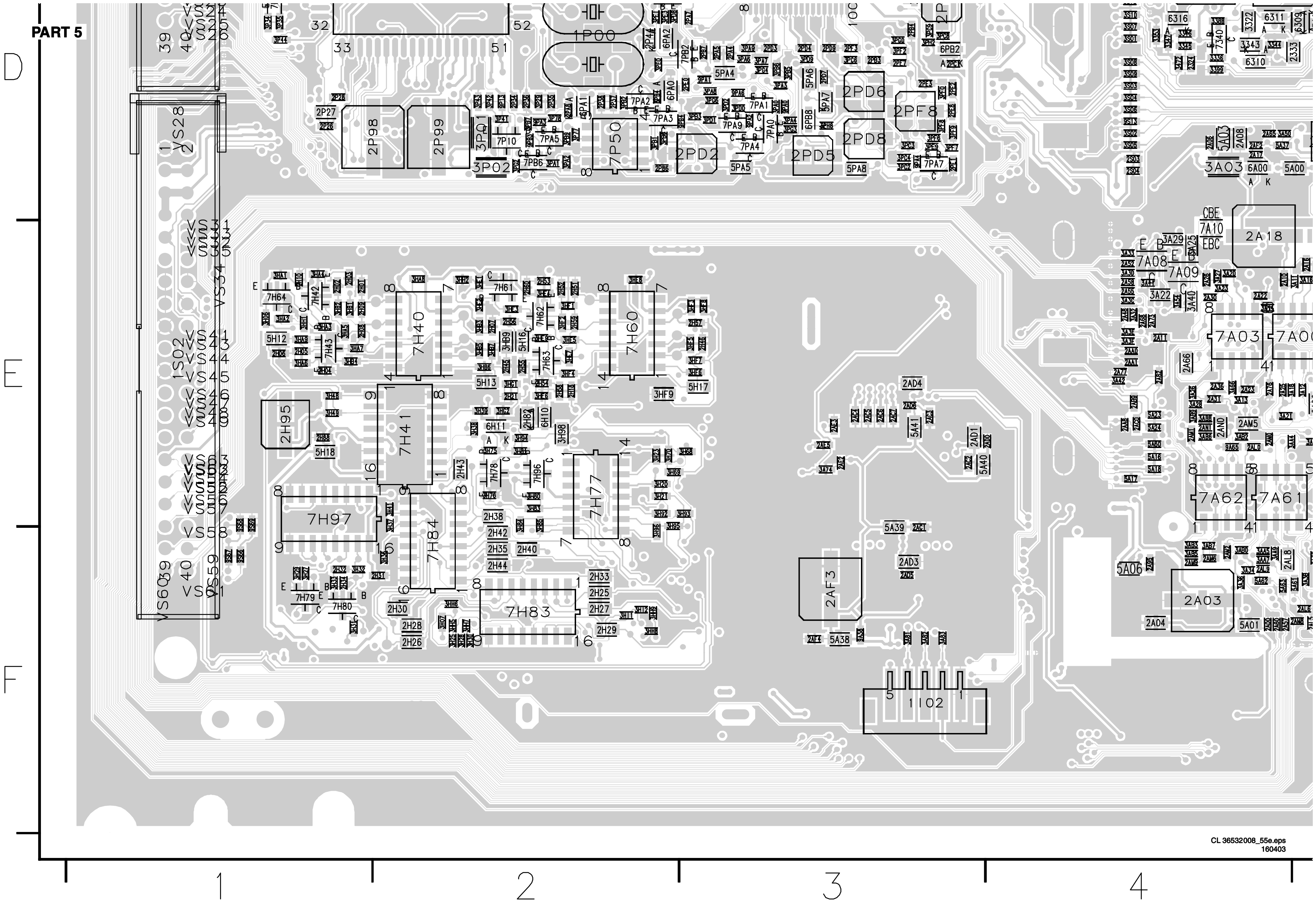

D
C
D
PART 3
1P06
7P09
7PA6
1P00
1P01
1P02
1P03
2P80
2P90
2PF1
2PC6
2PB8
2PC3
2PF9
2PC0
2PD6
2PD8
2PD2
2PD5
2PF8
2P98
2P99
7P50
7P57
5P07
2P05
21A6
31K8
1114
1403
2410
2414
2425
2A18
7H40
7H60
CL 36532008_55c.eps
160403

Layout Small Signal Board (Part 4 Top Side)


PART 4
7001
7723
7719
7717
7006
1701
1702
2770
2772
2792
2794
2806
2808
2016
1001
1F01
7005 GND
7727 GND
OUT 7720
GND IN
OUT IN
1307
1308
1305
7323
2377
2314
2340
2A42
2AB5
2A15
7A02
5403
1408
C
D
CL 36532008_55d.eps 160403

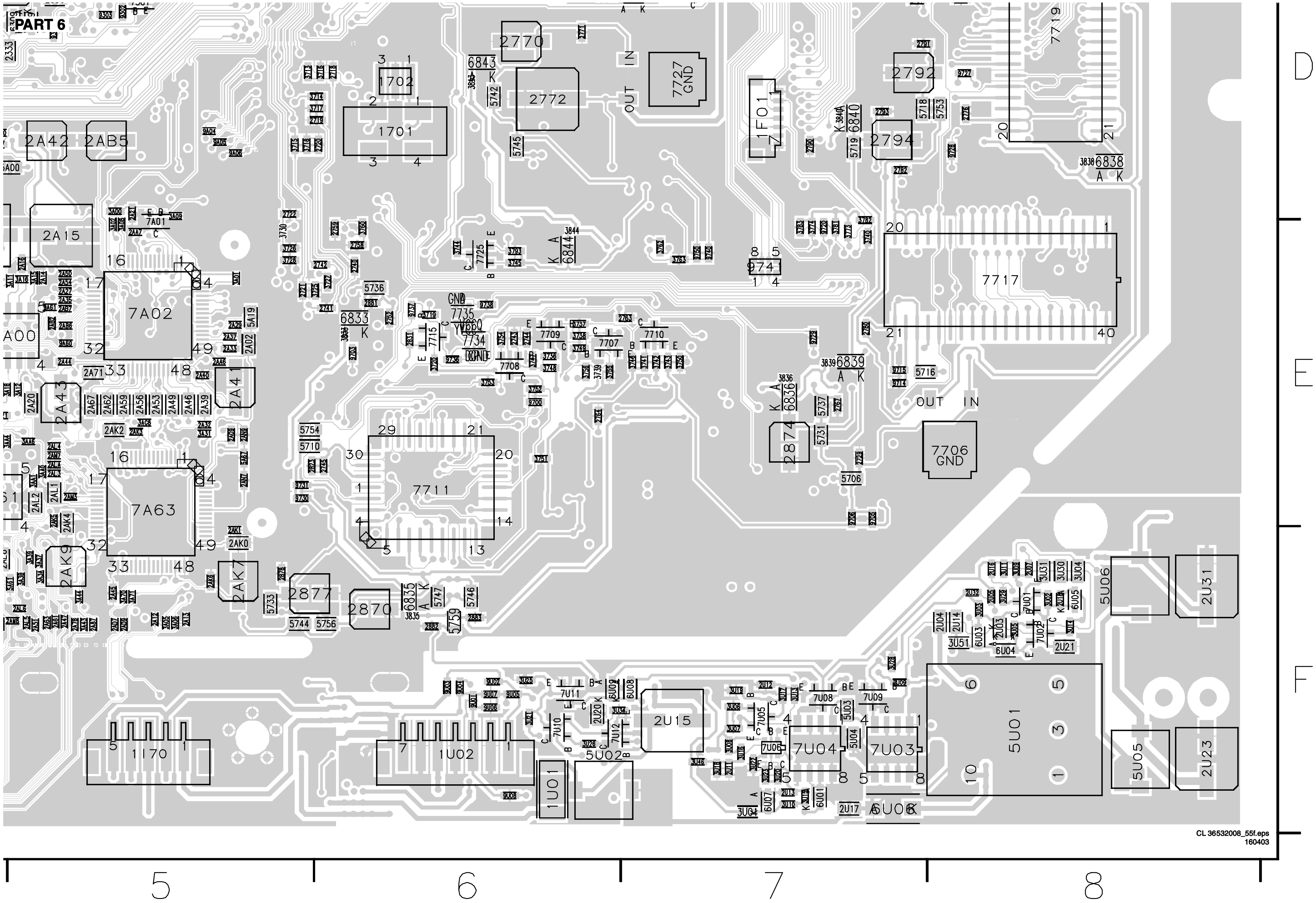
Layout Small Signal Board (Part 5 Top Side)

PART 5


D
E
F
1
2
3
4
1P00
2P98
2P99
7P50
2PD2
2PD5
2PD6
2PD8
2PF8
3P02
7P10
7PA5
7PA2
7PA3
7PA1
7PA9
7PA4
7PA7
5PA4
5PA5
5PA8
6PB2
3A03
6A00
5A00
7A10
2A18
7A08
7A09
3A22
7A03
7A62
7A61
2AF3
2A03
5A06
2A04
5A01
2AD4
2AD1
5A40
5A41
5A39
2AD3
5A38
1102
7H40
7H60
7H41
7H97
7H84
7H83
7H77
7H64
7H42
7H43
7H61
7H62
7H63
7H78
7H96
7H79
7H80
2H95
5H12
5H13
5H16
5H17
5H18
6H11
3HF9
2H38
2H42
2H35
2H40
2H44
2H33
2H25
2H27
2H29
2H30
2H28
2H26
2H43
6316
6311
6310
3343
2333
3322
7340
VS28
VS58
VS60
VS61
1S02

CL 36532008_55e.eps
160403

Layout Small Signal Board (Part 6 Top Side)

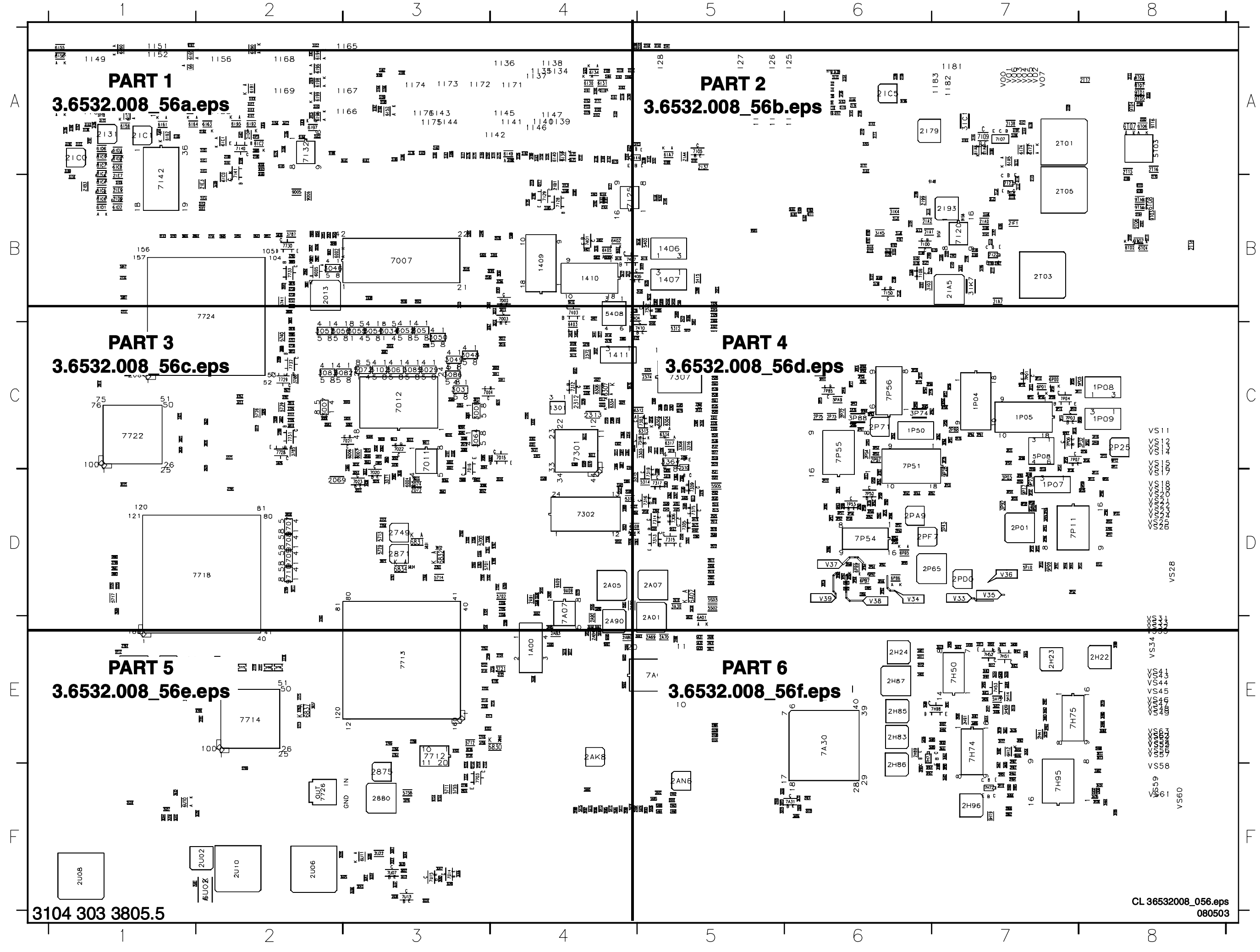

PART 6
D
E
F
5
6
7
8
2A42
2AB5
2A15
7A02
7A63
2A43
2A41
2AK9
2AK7
2AK0
1702
1701
2770
6843
2772
7727 GND
IN
OUT
1F01
2792
6840
2794
7719
6838
7717
9741
6844
7725
6833
7735
7734
7709
7707
7710
7708
7715
6839
6836
2874
5716
7706 GND
5706
5754
5710
7711
2877
2870
6835
5759
5733
5744
5756
5736
1170
1U02
1U01
5U02
2U15
7U11
7U10
7U12
7U04
7U03
7U08
7U09
7U05
7U06
6U08
5U01
5U05
5U06
2U23
2U31
2U21
6U04
3U51
2U17
3U04
6U07
6U01
7U01
7U02
7U03

CL 36532008_55f.eps
160403

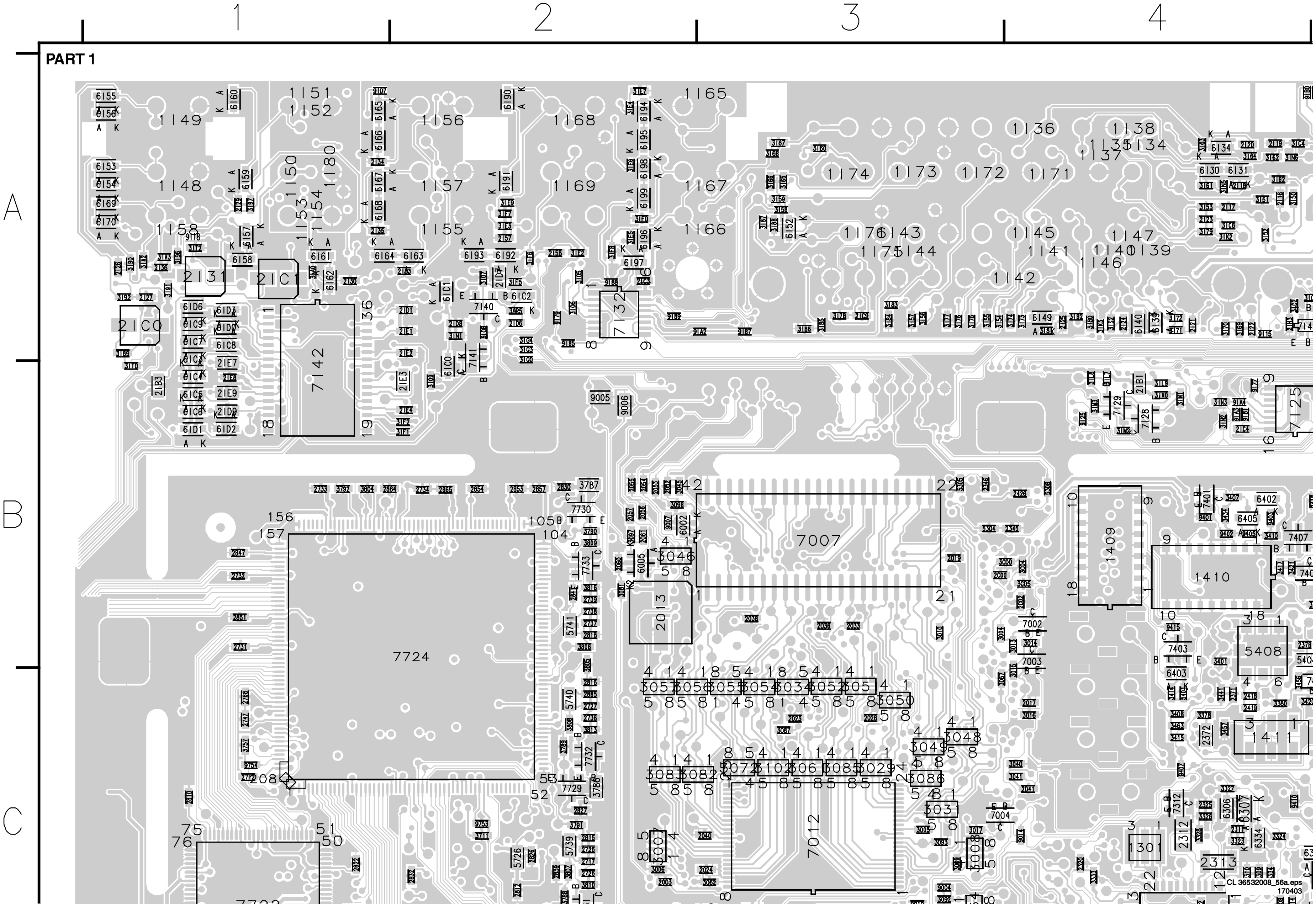
Layout Small Signal Board (Overview Bottom Side)

1301	C4	2023	C3	2072	D3	2341	C4	2421	C5	2727	C2	2762	E2	2812	C2	2865	B2	2A81	D4	2AE0	E5	2H19	E7	2H84	E7	2I19	A4	2I58	A2	2ID8	A2	2P16	C8	2P58	D6	2P83	D6	2PF5	C6	2S25	D5	2T02	A8
1305	C4	2024	C3	2074	D3	2342	D5	2422	B5	2728	E1	2765	E3	2815	C2	2871	D3	2A83	E5	2AE1	E5	2H20	E7	2H85	E6	2I20	A4	2I79	A6	2ID9	B1	2P18	D7	2P59	D6	2P84	D6	2PF6	C6	2S26	C5	2T03	B7
1306	B4	2026	C3	2302	C5	2343	D5	2423	C5	2730	E1	2766	E3	2816	C2	2872	D3	2A84	F4	2AE4	F6	2H22	E8	2H86	F6	2I21	A4	2I93	B7	2IE1	A2	2P23	D7	2P60	D6	2P85	D6	2PF7	D6	2S27	C5	2T04	B8
1307	B4	2033	B3	2303	C5	2345	B4	2424	C5	2731	B1	2768	C1	2818	B2	2875	F3	2A85	F4	2AE6	F5	2H23	E7	2H87	E6	2I22	A4	2I99	B6	2IE2	A2	2P24	C7	2P61	D6	2P87	C7	2S01	C5	2S28	B5	2T05	B7
1308	C4	2036	B3	2304	C4	2346	B3	2426	B4	2732	B1	2769	F2	2820	C1	2876	F3	2A86	F4	2AE8	F6	2H24	E6	2H89	E6	2I23	A4	2IA0	B7	2IE3	B2	2P25	C8	2P62	D6	2P88	C7	2S02	D5	2S29	B5	2T06	A8
1406	B5	2038	B3	2306	C5	2354	C5	2431	C4	2733	B1	2773	E2	2821	C1	2880	F3	2A88	E5	2AF0	E6	2H36	F8	2H90	F7	2I24	A4	2IA1	B6	2IE4	B2	2P29	D7	2P63	D6	2P91	D8	2S06	D5	2S30	D5	2T07	B8
1407	B5	2040	C3	2307	C4	2366	B5	2700	D3	2734	B2	2775	E2	2822	C1	2885	C2	2A89	E4	2AK8	E4	2H37	F8	2H91	E7	2I25	A4	2IA2	B6	2IE7	B1	2P30	D7	2P64	D6	2P92	D8	2S07	D5	2S31	C5	2T09	B8
1409	B4	2041	C4	2308	C4	2369	C5	2701	D3	2736	C2	2777	E2	2824	F3	2899	D1	2A90	D4	2AM4	E5	2H39	F8	2H96	F7	2I26	A1	2IA3	A6	2IE8	B1	2P31	D8	2P65	D7	2P93	D8	2S08	D5	2S32	C5	2T10	B8
1410	B4	2052	B2	2309	C4	2370	D5	2702	D3	2737	B2	2778	E2	2826	C2	2A01	E5	2A91	D4	2AN2	F5	2H41	E7	2H97	F8	2I27	A1	2IA4	A5	2IE9	B1	2P32	D7	2P66	D6	2P94	D8	2S09	D5	2S33	C5	2T13	A8
1411	C4	2053	B2	2310	C4	2371	C4	2703	D3	2738	B2	2779	E2	2827	C2	2A05	D4	2A92	E4	2AN3	F5	2H47	E7	2H98	E8	2I29	A1	2IA5	B6	2IF1	B7	2P33	D8	2P67	D6	2P95	D7	2S10	D5	2S34	C5	2T14	B8
1A00	D4	2054	B2	2311	C4	2372	C4	2704	D3	2739	B2	2781	E2	2828	C2	2A07	D5	2A93	F5	2AN4	F5	2H50	E7	2I04	B6	2I30	A1	2IA7	B7	2IH0	B7	2P43	D7	2P68	D6	2P96	D7	2S11	D5	2S35	C5	2T15	A8
1P04	C7	2055	B2	2312	C4	2374	C5	2705	D3	2746	F3	2784	E1	2830	B2	2A19	D5	2A94	F4	2AN5	F4	2H61	E7	2I06	B6	2I31	A1	2IB1	B4	2IH1	B7	2P45	D7	2P69	D6	2P97	C6	2S12	D5	2S36	C5	2T16	A8
1P05	C7	2056	B2	2313	C4	2375	C5	2706	D4	2747	C1	2785	E1	2832	C2	2A28	E5	2A96	F4	2AN6	F5	2H62	F7	2I07	B6	2I33	A2	2IB3	B1	2IH2	B7	2P46	D7	2P70	C6	2PA0	D6	2S13	D5	2S37	C5	2T17	A8
1P07	D7	2057	B2	2319	D5	2378	B4	2707	D4	2748	E3	2786	E1	2833	C2	2A34	E5	2A97	F4	2AN8	F5	2H63	F7	2I08	B6	2I34	A1	2IC0	A1	2IH3	A4	2P47	D7	2P71	C6	2PA1	D6	2S14	D5	2S38	C5	2T18	B8
1P08	C8	2060	B2	2320	C4	2384	B5	2708	D4	2749	D3	2787	E2	2835	C2	2A38	E5	2A98	F4	2C00	B3	2H64	F7	2I10	A6	2I35	A1	2IC1	A1	2IJ0	B6	2P48	C8	2P72	C6	2PA2	D6	2S15	D5	2S39	C5	2U01	F1
1P09	C8	2061	B2	2321	C4	2385	C5	2712	C1	2750	D3	2788	E2	2839	C2	2A64	E4	2A99	D4	2C02	B4	2H65	F7	2I11	A6	2I36	A1	2IC3	A2	2IJ1	B6	2P49	D7	2P73	C6	2PA3	D6	2S16	D5	2S40	C5	2U02	F1
1P50	C7	2062	C3	2323	C4	2386	D5	2713	E3	2751	D3	2789	D2	2841	B2	2A69	E5	2AA5	D4	2H11	E6	2H66	F7	2I12	A6	2I37	A5	2IC4	B4	2IJ2	B6	2P51	C7	2P74	D6	2PA9	D6	2S17	C5	2S41	C5	2U06	F2
2003	C2	2063	D3	2325	C4	2390	B5	2714	E4	2753	E3	2795	D2	2847	B1	2A70	E5	2AA9	E4	2H12	E6	2H67	F7	2I13	A6	2I38	A7	2IC5	A6	2IJ3	B6	2P52	C6	2P75	C6	2PB0	D6	2S18	C5	2S42	C5	2U08	F1
2010	D4	2064	C3	2326	C5	2399	B5	2717	C2	2755	E3	2799	D1	2851	B1	2A72	E5	2AB0	E4	2H13	E7	2H68	F8	2I14	A6	2I43	B7	2IC6	A6	2P01	D7	2P53	C6	2P76	C7	2PB1	D6	2S19	C5	2S43	C5	2U10	F2
2013	B3	2065	C3	2328	D4	2402	B5	2723	F3	2756	E3	2800	D1	2853	B2	2A74	E5	2AB3	E4	2H14	E7	2H79	E8	2I15	A6	2I44	A7	2IC9	A3	2P11	C8	2P54	C6	2P77	D6	2PB2	D6	2S20	C5	2S44	C5	2U19	F2
2017	C4	2066	C3	2335	D5	2418	C4	2724	E4	2757	E3	2801	D1	2854	B2	2A75	E5	2AB4	E4	2H15	E7	2H80	E8	2I16	A4	2I46	A7	2ID1	A2	2P12	D8	2P55	C6	2P78	C6	2PD0	D7	2S21	D5	2S45	B5	2U22	F3
2019	B3	2068	D3	2337	D4	2419	C4	2725	C2	2760	D3	2802	D1	2857	B2	2A79	D4	2AB8	E5	2H16	E7	2H81	E7	2I17	A4	2I47	A5	2ID6	A2	2P14	C8	2P56	D6	2P79	C6	2PE9	D6	2S22	D5	2S46	B5	2U24	F3
2022	D3	2069	D2	2338	D4	2420	C5	2726	C2	2761	D3	2810	C1	2864	B1	2A80	D4	2AD8	E5	2H17	E7	2H83	E6	2I18	A4	2I57	A2	2ID7	A2	2P15	D8	2P57	D6	2P82	D6	2PF2	C6	2S23	B5	2T01	A7	2U25	F3

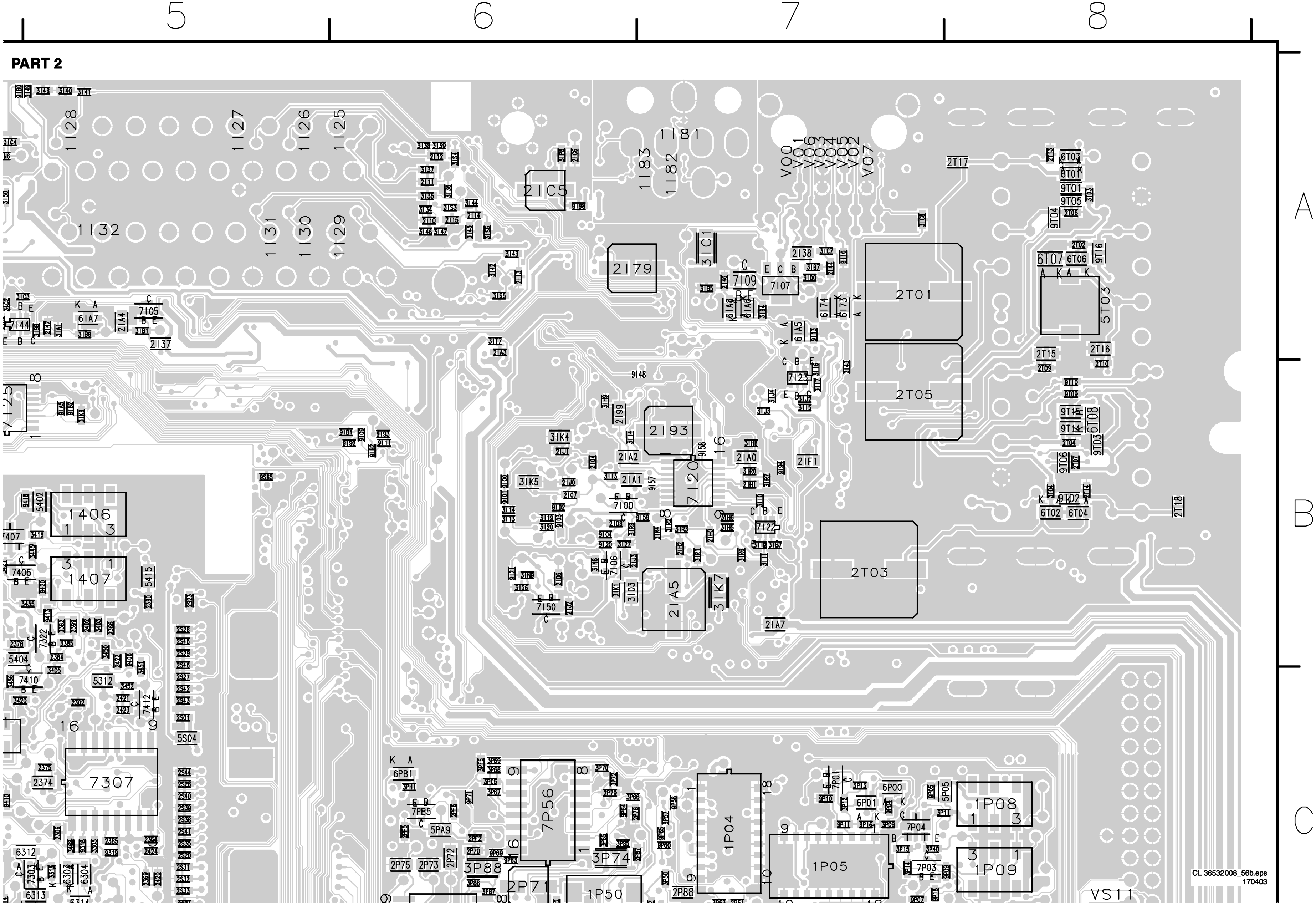
2U26	F3	3385	B5	3H08	E7	3I88	A3	3P36	C8	5P05	C8	7021	C3	9415	B4
2U27	F1	3386	D5	3H18	F7	3I89	A1	3P37	D7	5P08	C7	7022	C3	9418	B5
2U28	F1	3389	D5	3H26	F8	3I90	A1	3P38	D7	5P09	D7	7023	D3	9420	B5
2U30	F1	3391	D5	3H34	F8	3I91	A1	3P39	C7	5P10	D7	7301	D4	9421	D5
3001	C3	3401	B4	3H35	F8	3I92	A1	3P40	C7	5P50	D6	7302	D4	9701	E3
3002	C3	3403	B5	3H45	E7	3I96	A1	3P45	D7	5PA9	C6	7303	C5	9702	E3
3004	B3	3405	C5	3H46	E7	3I97	A1	3P46	D7	5S02	D5	7305	D5	9704	D3
3005	C3	3407	B4	3H50	E7	3I98	A5	3P47	D8	5S03	D5	7306	D5	9707	D2
3007	C2	3408	C4	3H51	E7	3IA0	A1	3P48	D7	5S04	C5	7307	C5	9708	D2
3008	C3	3410	B4	3H52	F6	3IA1	A5	3P50	C7	5S05	D5	7309	D5	9709	D2
3009	C3	3414	C4	3H53	E7	3IA2	A1	3P51	C7	5T03	A8	7310	C5	9710	D2
3010	B3	3415	C4	3H54	F6	3IA3	A1	3P52	D6	6002	B2	7312	C4	9711	D2
3013	B4	3417	B4	3H55	E7	3IB1	A5	3P53	C7	6004	D3	7313	D5	9712	E1
3014	B4	3419	B5	3H56	E7	3IB2	A4	3P54	C6	6005	B2	7314	D5	9713	E1
3015	C4	3420	C4	3H57	E7	3IB4	A7	3P55	D6	6006	C2	7315	D5	9716	E2
3016	C4	3421	B4	3H59	E6	3IB5	A7	3P56	D6	6007	C3	7316	D5	9717	E2
3017	C3	3434	B4	3H60	F6	3IB7	A7	3P57	D6	6303	C5	7317	D5	9722	D1
3022	D3	3435	B5	3H62	E7	3IB9	A5	3P58	D6	6304	C5	7318	C5	9723	D1
3023	C3	3441	C4	3H63	E7	3IC1	A7	3P59	D6	6306	C4	7319	D5	9724	D1
3028	C3	3445	B5	3H64	E8	3IC2	A4	3P60	D6	6307	C4	7322	B5	9725	F3
3029	C3	3450	B5	3H65	E7	3IC3	A4	3P62	D6	6308	D4	7375	D5	9726	E4
3030	C3	3451	C5	3H66	E8	3IC4	A4	3P63	D6	6312	C4	7401	B4	9732	F3
3031	C3	3452	C5	3H67	F7	3IC6	A4	3P64	D6	6313	C5	7403	C4	9733	F3
3032	C3	3453	D4	3H71	E8	3IC7	A7	3P65	C6	6314	C5	7406	B4	9734	E3
3034	C3	3454	D4	3H72	E7	3IC8	A7	3P66	C6	6317	C5	7407	B4	9735	E3
3036	D3	3455	D4	3H73	E8	3ID0	A7	3P67	C6	6334	C4	7410	C5	9753	C2
3037	C3	3456	C4	3H74	E7	3IE2	A2	3P68	C6	6402	B4	7412	C5	9754	C1
3038	D3	3457	C4	3H77	E7	3IE3	A2	3P69	C6	6403	B4	7703	F3	9760	E2
3040	C4	3459	D5	3H78	E7	3IE4	A2	3P70	C6	6405	B4	7712	F3	9761	E2
3041	C4	3463	C4	3H79	E7	3IE5	A2	3P72	C6	6830	E4	7713	E2	9767	D4
3042	D3	3465	D5	3H82	E7	3IE6	A2	3P74	C6	6831	D3	7714	E2	9768	D4
3043	D3	3467	D5	3H86	E7	3IE7	A2	3P75	D6	6832	D3	7718	D2	9769	D4
3044	C3	3468	C5	3H87	E7	3IE8	A2	3P76	D6	6834	D3	7722	C1	9A00	E4
3045	B2	3470	D5	3H88	E6	3IE9	A2	3P79	C7	6837	E2	7724	B2	9A01	E4
3046	B2	3471	D5	3H89	F7	3IF0	A2	3P80	C7	6845	E1	7726	F2	9A02	E4
3048	C3	3703	D3	3H90	F7	3IF1	B2	3P81	D6	6A01	E5	7728	C2	9A03	E4
3049	C3	3704	D3	3H91	E7	3IF2	B2	3P82	C7	6A02	D5	7729	C2	9A08	D4
3050	C3	3705	D4	3H97	E7	3IF5	A2	3P85	C6	6H12	E7	7730	B2	9A09	D4
3051	C3	3706	D3	3H99	E7	3IF6	A2	3P86	C6	6I30	A4	7731	C2	9I00	B6
3052	C3	3707	D3	3HB8	E8	3IF7	A2	3P87	C6	6I31	A4	7732	C2	9I01	B6
3053	D3	3708	E4	3HC1	E7	3IG0	A2	3P88	C6	6I34	A4	7733	B2	9I02	B6
3054	C3	3709	E3	3HC2	E7	3IG3	A2	3P92	D7	6I39	A4	7A06	E4	9I03	B6
3055	B3	3710	E3	3HC3	E7	3IG4	A2	3PC0	D7	6I40	A4	7A07	D4	9I04	B6
3056	C2	3711	C2	3HC4	E7	3IH5	B7	3PC5	C6	6I49	A4	7A30	E5	9I07	A1
3057	C2	3712	D3	3HC5	E7	3IH6	B7	3PD7	D6	6I52	A3	7A31	F6	9I09	B6
3060	C3	3721	E4	3HC6	E7	3IH7	B7	3PF5	C6	6I53	A1	7H50	E7	9I11	B6
3061	C3	3722	E4	3HC7	E7	3IH8	B7	3PG1	D6	6I54	A1	7H51	E7	9I13	A7
3062	C3	3729	F3	3HC8	E7	3IH9	B6	3PH1	C6	6I55	A1	7H52	E7	9I15	A4
3063	C3	3731	F3	3HC9	E7	3II0	B7	3PH5	D6	6I56	A1	7H53	E7	9I16	A7
3064	C3	3733	F3	3HD1	E6	3II1	B7	3PH6	D6	6I57	A1	7H72	F7	9I18	A1
3067	C3	3734	E3	3HD2	E6	3II2	B7	3PH7	D6	6I58	A1	7H73	E7	9I20	B6
3069	C3	3735	E4	3HD3	E7	3II3	B6	3PH9	D6	6I59	A1	7H74	E7	9I21	B6
3070	D3	3757	C1	3HD4	E7	3II4	B6	3T03	A8	6I60	A1	7H75	E8	9I25	B4
3071	D3	3758	E3	3HD5	E7	3II5	B7	3T04	B8	6I61	A1	7H95	F7	9I48	B7
3072	C3	3759	E3	3HD6	E7	3II6	B7	3U12	F3	6I62	A1	7H98	E7	9I57	B7
3079	C3	3764	E3	3HD7	E7	3II7	B7	3U24	F3	6I63	A2	7I00	B6	9I58	B7
3081	B2	3765	E3	3HD8	E7	3IJ2	B7	3U27	F3	6I64	A1	7I05	A5	9I59	B7
3082	C3	3766	E1	3HD9	E7	3IJ3	B7	3U32	F1	6I65	A1	7I06	B6	9I77	B4
3083	C2	3767	E2	3HH3	E7	3IJ4	B7	3U33	F2	6I66	A2	7I07	A7	9I79	A2
3085	C3	3768	E2	3I03	B6	3IK1	B6	3U35	F3	6I67	A1	7I09	A7	9I81	B4
3086	C3	3769	E2	3I13	B6	3IK2	A4	3U36	F3	6I68	A2	7I20	B7	9I82	B5
3087	C3	3770	E2	3I14	B6	3IK3	A4	3U37	F3	6I69	A1	7I22	B7	9I85	A2
3088	C3	3771	C2	3I19	B6	3IK4	B6	3U38	F3	6I70	A1	7I23	B7	9I87	A3
3092	C3	3775	E2	3I20	B6	3IK5	B6	3U39	F3	6I73	A7	7I25	B4	9I88	A2
3093	C3	3776	E2	3I26	B6	3IK7	B7	3U40	F3	6I74	A7	7I28	B4	9I89	A2
3094	C3	3785	C2	3I27	B6	3IK9	B5	3U41	F3	6I90	A2	7I29	B4	9I92	B6
3095	C3	3786	C2	3I34	A6	3IL7	B4	3U42	F3	6I91	A2	7I32	A2	9I93	B6
3096	D3	3787	B2	3I35	A6	3IL8	B4	3U43	F3	6I92	A2	7I40	A2	9I94	B7
3097	B2	3788	C2	3I36	A6	3IL9	B4	3U44	F1	6I93	A2	7I41	A2	9I98	A6
3098	B2	3789	C2	3I37	A6	3IM0	B4	3U45	F1	6I94	A2	7I42	B1	9IA2	A3
3100	C3	3790	B2	3I38	A6	3IM1	B4	3U47	F3	6I95	A2	7I44	A4	9IA3	B4
3101	C3	3791	C2	3I39	A6	3IM2	B4	3U48	F3	6I96	A2	7I50	B6	9IA4	B4
3102	C3	3792	B1	3I40	A5	3IM3	B4	3U49	F3	6I97	A2	7P01	C7	9IA5	B5
3103	C2	3804	B1	3I41	A5	3IN1	A2	3U50	F3	6I98	A2	7P03	C7	9IB0	A4
3303	C5	3805	B2	3I42	A6	3IN2	B4	5304	B3	6I99	A2	7P04	C7	9IB1	B6
3305	D4	3806	B2	3I43	A6	3IN3	B4	5305	B3	6IA5	A7	7P06	C7	9IB2	B6
3307	C4	3807	C2	3I44	A6	3IN5	A4	5308	B4	6IA6	A7	7P07	D7	9P04	C7
3308	C5	3808	C2	3I45	A6	3IN6	A4	5312	C5	6IA7	A5	7P11	D8	9P05	C7
3310	C4	3809	B2	3I46	A6	3IN8	B6	5313	D4	6IA8	A7	7P51	D6	9P07	C7
3311	C4	3810	C2	3I47	A6	3IN9	B6	5314	D5	6IC0	B2	7P52	D6	9P09	C8
3312	C5	3813	C2	3I48	A5	3IO5	A2	5315	D4	6IC1	A2	7P53	D6	9P10	C7
3313	C5	3816	B2	3I49	A5	3IO6	A2	5401	C4	6IC2	A2	7P54	D6	9P11	C7
3314	C4	3828	D2	3I50	A4	3IO7	A2	5402	B5	6IC3	A1	7P55	C6	9P12	C8
3315	C5	3830	E4	3I51	A4	3IO8	A2	5404	B4	6IC4	B1	7P56	C6	9P16	C7
3316	C5	3831	D3	3I52	A4	3IO9	B2	5408	B4	6IC5	B1	7PB5	C6	9P17	D7
3319	C5	3832	D3	3I53	A4	3IP8	A6	5415	B5	6IC6	B1	7U07	F3	9P18	C7
3323	C4	3834	D3	3I54	A3	3IR0	B7	5700	D3	6IC7	A1	7U13	F3	9P20	D7
3324	C4	3837	E2	3I55	A3	3IR1	B7	5701	D3	6IC8	A1	7U14	F3	9P21	D7
3325	D5	3845	E1	3I56	A3	3IR2	B7	5702	D4	6IC9	A1	7U15	F3	9P22	D8
3326	C4	3A17	E4	3I57	A3	3IR3	B7	5711	F3	6ID0	A1	9001	C4	9P23	D7
3327	C4	3A19	E4	3I58	A3	3IR4	B7	5712	E3	6ID1	B1	9002	D3	9P24	D8
3328	C4	3A30	D5	3I59	A3	3IR5	A2	5713	D3	6ID2	B1	9003	D3	9P25	D8
3331	C4	3A35	E5	3I60	A3	3IR6	B7	5714	D3	6ID3	A1	9004	C3	9P28	D7
3333	C4	3A38	D5	3I61	A4	3IR7	B7	5717	D1	6ID6	A1	9005	B2	9P52	D6
3334	C4	3A45	E4	3I62	A4	3IR8	B6	5726	C2	6P00	C7	9006	B2	9P53	D6
3337	D4	3A46	D4	3I63	A4	3IS2	A4	5729	D3	6P01	C7	9007	B2	9P54	D6
3338	D5	3A47	E4	3I64	A4	3IS3	A6	5738	F3	6PB1	C6	9008	C3	9P55	D7
3339	D4	3A48	E4	3I65	A3	3IS4	A6	5739	C2	6PB5	D6	9009	C3	9P56	D7
3350	D5	3A49	D4	3I66	A3	3IS5	A6	5740	C2	6PB6	D6	9010	C3	9P57	C7
3351	D5	3A51	E4	3I67	A3	3IS6	A6	5741	B2	6PB7	D6	9011	C3	9P58	C7
3352	D5	3A52	D4	3I68	A3	3IT0	B1	5755	F3	6PB9	D6	9012	C3	9P59	D8
3354	D5	3A53	E4	3I69	A4	3IT2	A1	5A04	F5	6T01	A8	9013	C3	9P60	C7
3355	D5	3A55	D4	3I70	A4	3IT7	A6	5A05	F5	6T02	B8	9014	C4	9P63	C6
3356	C5	3A56	D4	3I71	A4	3P03	D7	5A10	F4	6T03	A8	9015	D3	9P64	C6
3357	D5	3A72	F6	3I72	A4	3P04	C7	5A11	F4	6T04	B8	9308	C4	9P65	C7
3358	D4	3A73	F5	3I73	A4	3P05	D7	5A12	F4	6T06	A8	9309	C4	9P69	C6
3359	D5	3A75	F5	3I74	A4	3P06	C7	5A13	F4	6T07	A8	9310	C4	9P71	C6
3360	D5	3A76	F5	3I75	A3	3P09	C7	5A14	F4	6T08	B8	9311	C4	9S65	B5
3362	D5	3A77	E6	3I76	A3	3P11	C7	5A15	F4	6U02	F1	9312	C4	9T01	A8
3364	D5	3A78	F6	3I77	A3	3P12	C7	5A20	E5	6U10	F1	9313	D5	9T02	B8
3365	D5	3A84	F6	3I78	A3	3P13	C7	5A21	E5	6U11	F3	9318	C5	9T03	B8
3366	C4	3AA2	F5	3I79	A4	3P14	C7	5A31	E5	7002	B4	9319	C5	9T04	A8
3367	C4	3C00	B4	3I80	A4	3P15	C7	5A32	E5	7003	C4	9401	B4	9T05	A8
3368	D4	3C04	B4	3I81	A4	3P16	C8	5A33	E5	7004	C3	9402	B4	9T06	B8
3369	D4	3C05	B4	3I82	A4	3P21	C7	5A64	F5	7007	B3	9403	B4	9T09	B8
3378	C4	3H00	F7	3I83	A3	3P22	D7	5A65	F5	7011	C3	9405	B4	9T10	B8
3380	C4	3H01	E7	3I84	A3	3P23	D7	5A66	F5	7012	C3	9406	B5	9T14	B8
3382	B5	3H02	F7	3I85	A3	3P24	D7	5H14	E7	7015	C4	9407	C4	9T15	B8
3383	D5	3H04	F7	3I86	A3	3P31	C8	5H15	E7	7016	C3	9410	C4	9T16	A8
3384	D4	3H05	F7	3I87	A3	3P32	C8	5H19	F7	7020	D3	9413	B5		



Layout Small Signal Board (Part 1 Bottom Side)

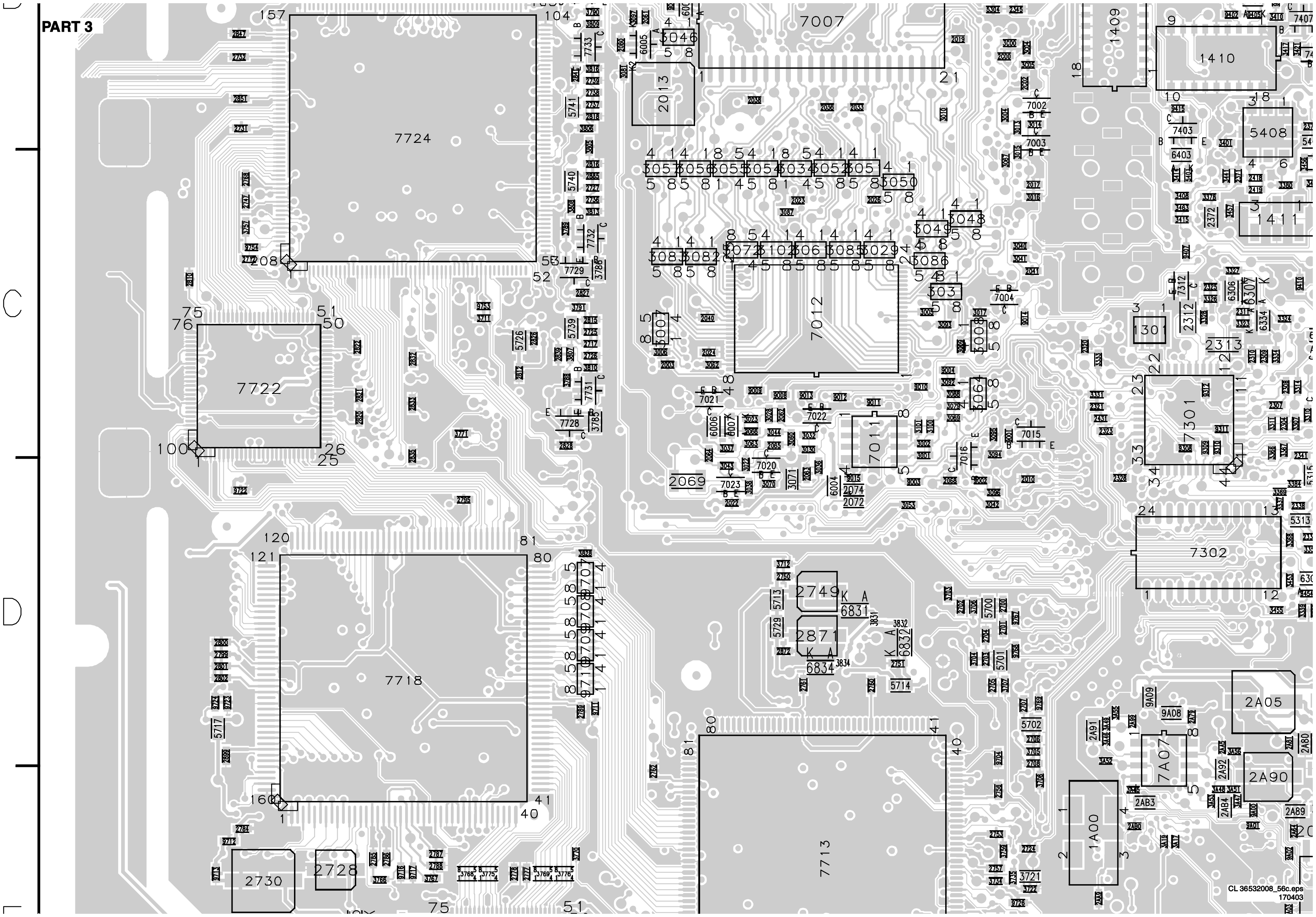

1
2
3
4
A
B
C
PART 1
1149
1148
1158
1151
1152
1150
1153
1154
1180
1156
1157
1155
1168
1169
1165
1167
1166
1136
1138
1135
1134
1137
1174
1173
1172
1171
1176
1143
1175
1144
1145
1141
1140
1139
1147
1146
1142
2131
21C1
21C0
7142
7140
7141
7132
9005
9006
7724
7730
7733
7729
7732
7007
2013
7012
1409
1410
5408
1411
1301
2313
2312
7125
7128
7129
7401
7403
7407
7002
7003
7004
6402
6405
6403
6130
6131
6134
CL 36532008_56a.eps
170403

Layout Small Signal Board (Part 2 Bottom Side)


5
6
7
8
A
B
C
PART 2
1128
1127
1126
1125
1132
1131
1130
1129
1181
1183
1182
21C5
2179
31C1
7109
7107
2T01
2T05
2T03
5T03
2T17
6T07
6T06
2T15
2T16
6T02
6T04
2T18
9T03
6T08
V00
V01
V06
V03
V04
V05
V02
V07
7105
61A7
21A4
7144
2137
2193
7120
21A2
21A1
31K4
31K5
7100
7106
21A5
31K7
31K3
7150
21A0
21F1
7122
7123
61A5
6174
6173
21A7
1406
1407
7407
7406
5402
5415
7322
5404
7410
5312
7412
7307
2374
6312
7301
6313
6304
5S04
6PB1
7PB5
5PA9
2P75
2P73
2P72
7P56
3P88
2P71
3P74
1P50
1P04
2P88
1P05
7P01
6P00
6P01
7P04
7P03
5P05
1P08
1P09
VS11

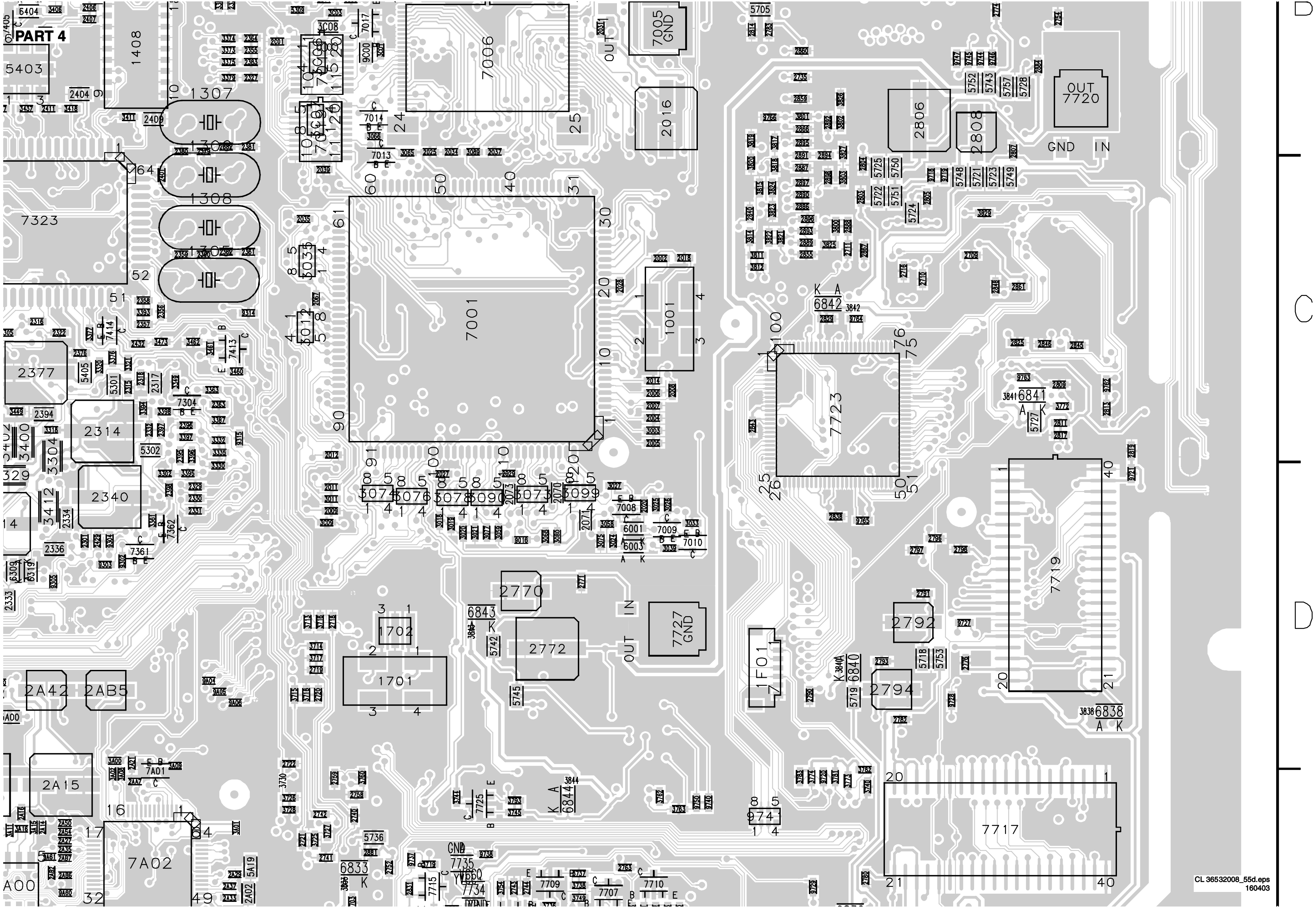
CL 36532008_56b.eps
170403

Layout Small Signal Board (Part 3 Bottom Side)


PART 3
C
D
7724
7722
7718
7713
7007
7012
7011
7301
7302
1409
1410
1411
5408
1301
2013
2069
2749
2871
2730
2728
2A05
2A90
7A07
1A00

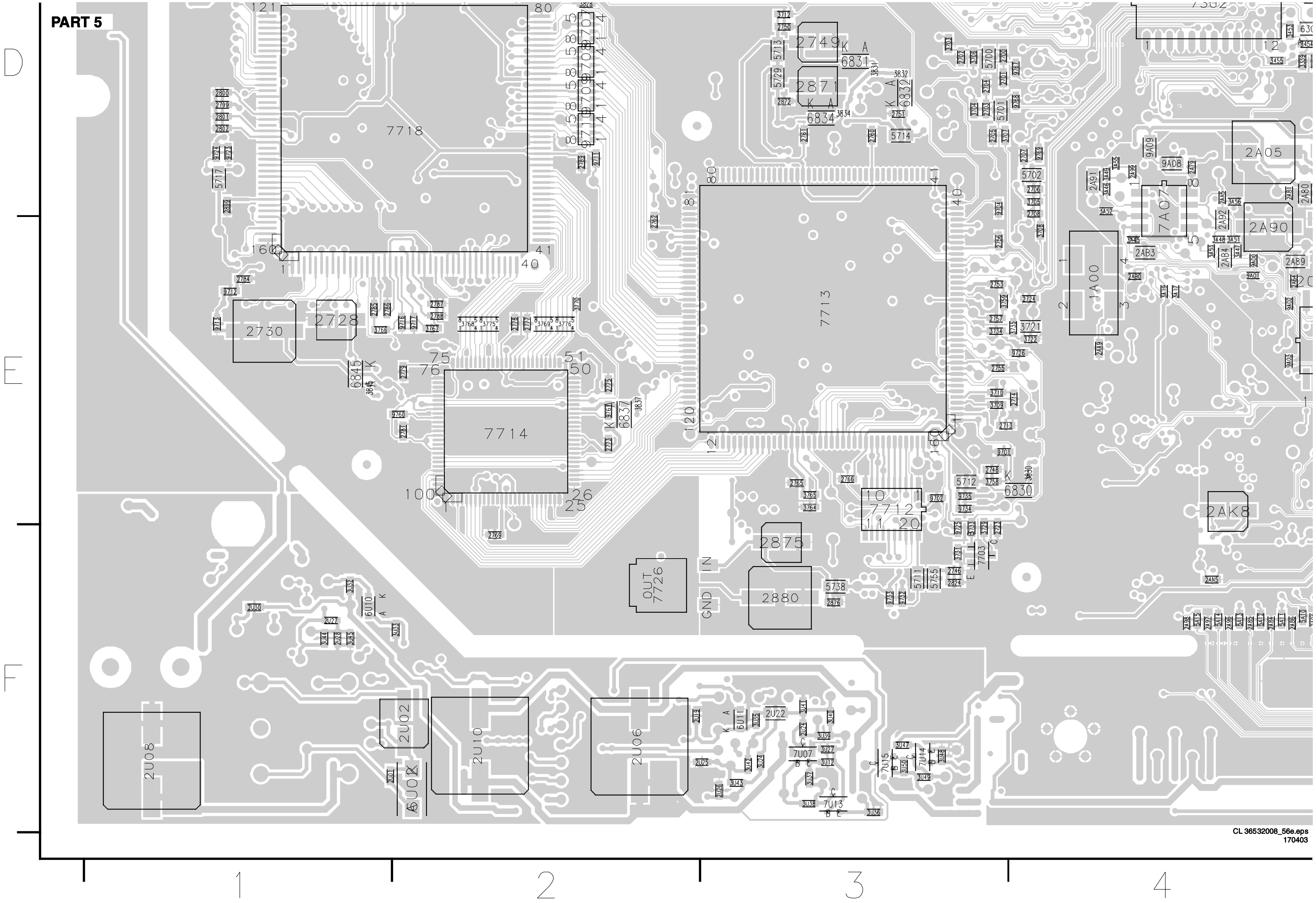
CL 36532008_56c.eps
170403

Layout Small Signal Board (Part 4 Bottom Side)


PART 4
6404
5403
1408
1307
1308
1305
7323
2377
2314
2340
5302
3400
3304
3412
2336
7304
7361
7362
7413
7414
3012
3035
7006
7005 GND
OUT
2016
7001
1001
7014
7013
7017
3074
3076
3078
3090
3073
3099
7008
7009
7010
6001
6003
2770
6843
2772
7727 GND
IN
1702
1701
2A42
2AB5
2A15
7A01
7A02
6833
7735
7734
7725
7709
7707
7710
6844
5736
5745
5742
5705
2806
2808
7720
OUT
GND
IN
6842
7723
6841
7719
2792
2794
6840
6838
1F01
9741
7717
5725
5750
5748
5721
5723
5749
5722
5751
5724
5752
5743
5757
5728
5718
5753
5719
C
D

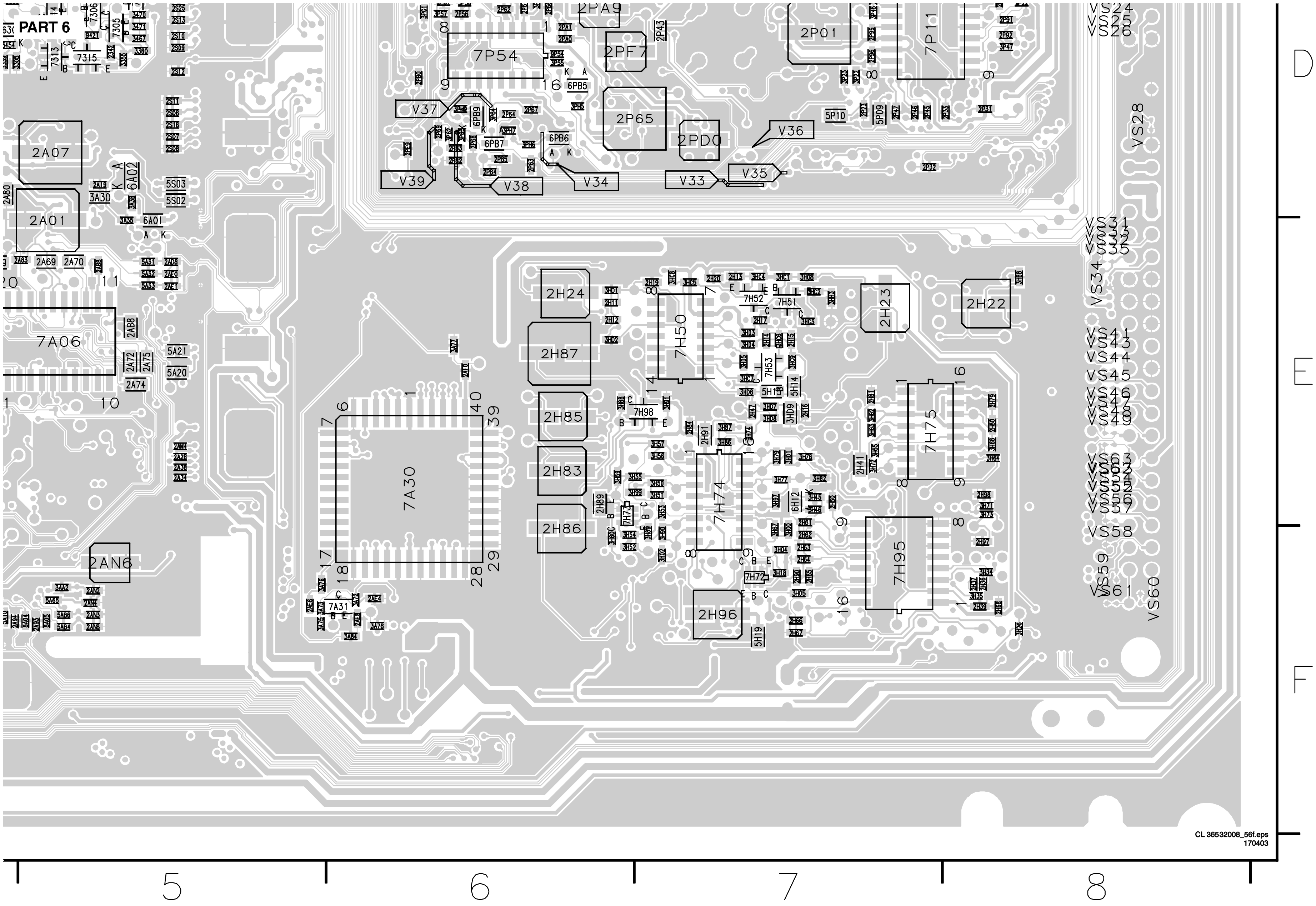
CL 36532008_55d.eps
160403

Layout Small Signal Board (Part 5 Bottom Side)


PART 5
D
E
F
1
2
3
4
7718
121
80
160
1
41
40
7713
80
81
41
40
120
12
160
7714
75
76
51
50
100
1
26
25
2730
2728
2749
2871
6831
6832
6834
6837
6845
6830
5714
5702
5712
7712
10
11
20
2875
2880
5738
7726
OUT
IN
GND
1A00
7A07
2A05
2A90
2A89
2AB3
2AK8
9A08
9A09
3721
2U08
2U02
2U10
2U06
6U01
7U07
7U13
7U14
7U15
2U22

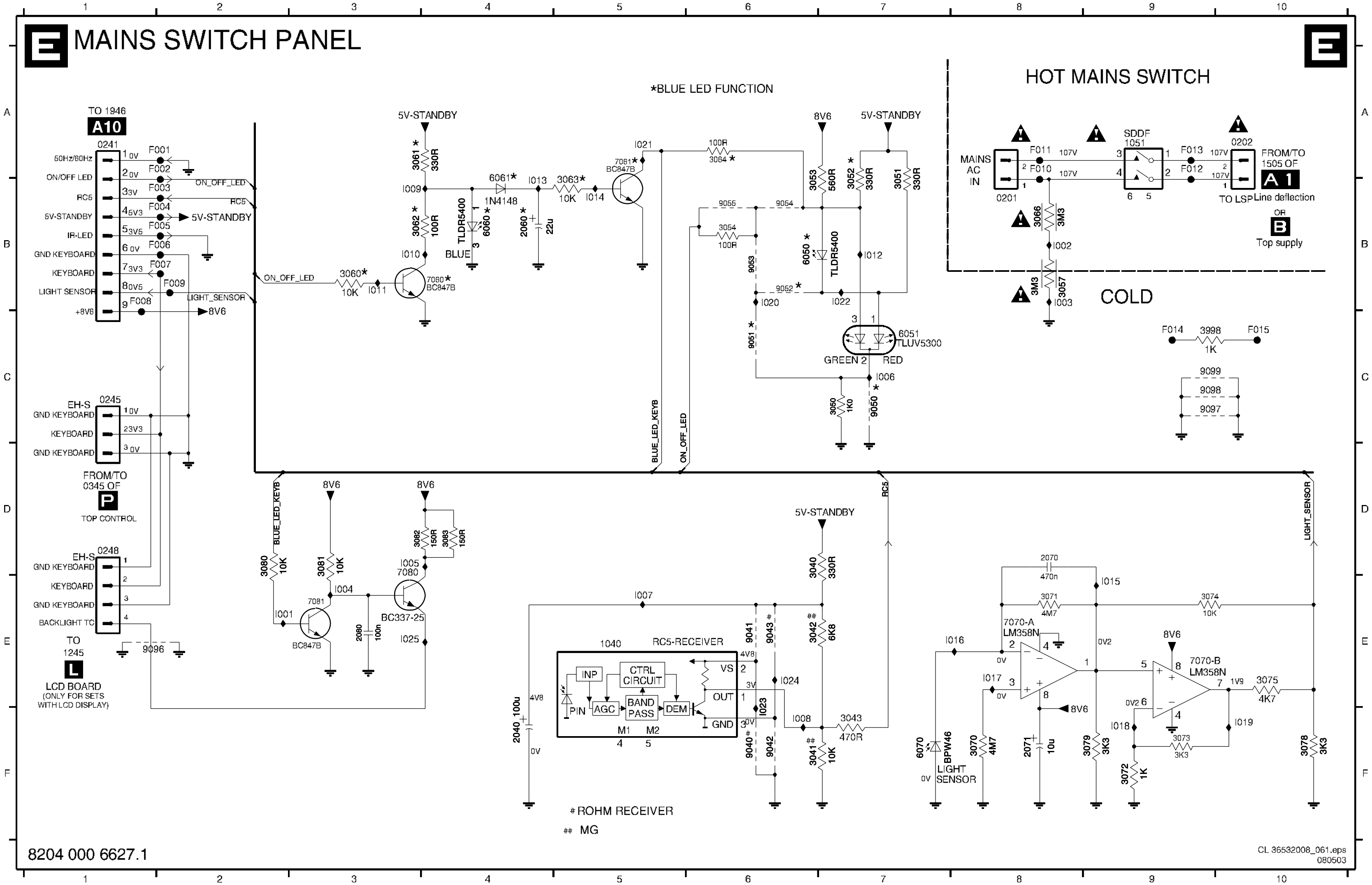
CL 36532008_56e.eps
170403

Layout Small Signal Board (Part 6 Bottom Side)


PART 6
7306
7313
7315
2A07
2A01
6A02
6A01
3A30
5S03
5S02
2A69
2A70
7A06
2A72
2A75
2A74
2AB8
5A21
5A20
2AN6
7A31
7A30
7P54
2PA9
2PF7
2P65
2PD0
2P01
7P11
5P10
5P09
6PB5
6PB6
6PB7
6PB9
V33
V34
V35
V36
V37
V38
V39
2H24
2H87
2H85
2H83
2H86
2H89
2H96
2H23
2H22
7H50
7H51
7H52
7H53
5H14
5H15
7H98
3HD9
2H91
2H41
7H74
6H12
7H73
7H72
5H19
7H75
7H95
VS24
VS25
VS26
VS28
VS31
VS32
VS33
VS34
VS35
VS41
VS43
VS44
VS45
VS46
VS47
VS48
VS49
VS58
VS59
VS60
VS61
D
E
F
5
6
7
8

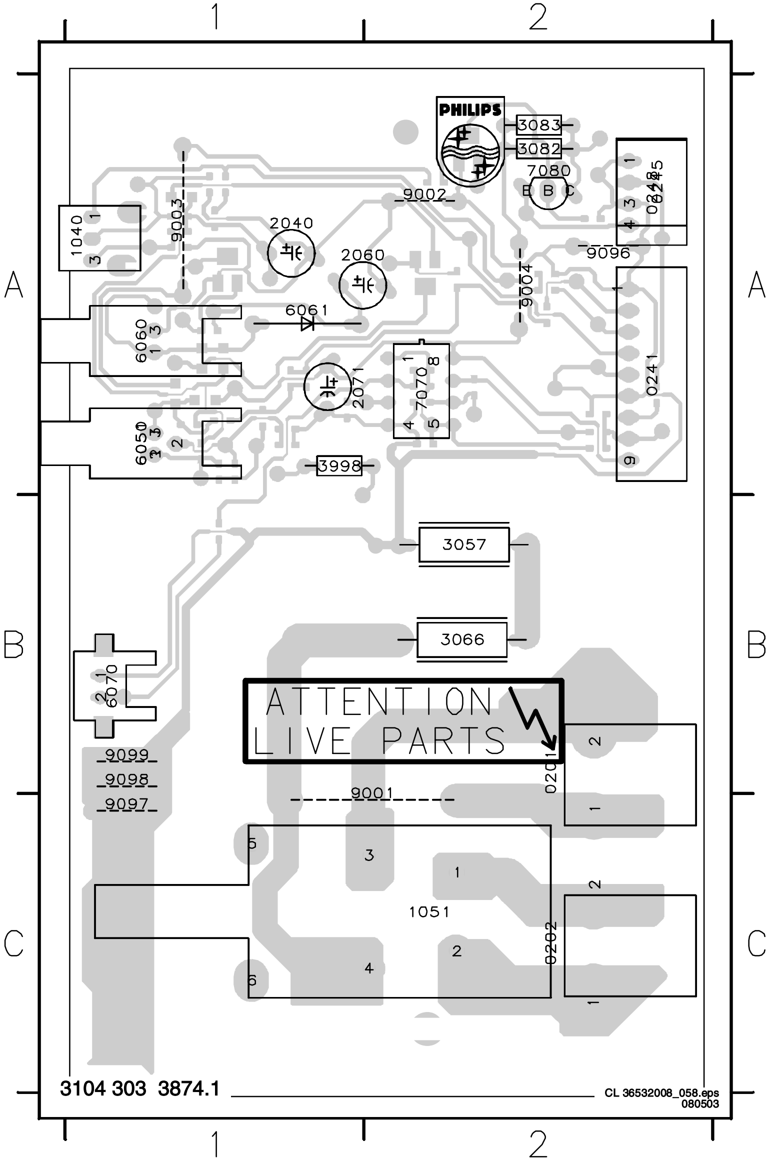
CL 36532008_56f.eps
170403

Mains Switch Panel


E
MAINS SWITCH PANEL
E
*BLUE LED FUNCTION
HOT MAINS SWITCH
COLD
TO 1946
A10
0241
50Hz/60Hz
ON/OFF LED
RC5
5V-STANDBY
IR-LED
GND KEYBOARD
KEYBOARD
LIGHT SENSOR
+8V6
F001
F002
F003
F004
F005
F006
F007
F008
F009
ON_OFF_LED
LIGHT_SENSOR
5V-STANDBY
8V6
EH-S
0245
GND KEYBOARD
KEYBOARD
GND KEYBOARD
FROM/TO
0345 OF
P
TOP CONTROL
EH-S
0248
BACKLIGHT TC
TO
1245
L
LCD BOARD
(ONLY FOR SETS
WITH LCD DISPLAY)
9096
3061 330R
3062 100R
3060 10K
7060 BC847B
6061 1N4148
3063 10K
2060 22u
6060 TLDR5400
BLUE
7081 BC847B
3064 100R
3053 560R
3052 330R
3051 330R
3054 100R
9055
9054
9053
9052
9051
6050 TLDR5400
6051 TLUV5300
GREEN
RED
3050 1K0
9050
BLUE_LED_KEYB
ON_OFF_LED
MAINS
AC
IN
0201
F011
F010
107V
SDDF
1051
F013
F012
0202
FROM/TO
1505 OF
A1
TO LSP
Line deflection
OR
B
Top supply
3066 3M3
3057 3M3
F014
3998 1K
F015
9099
9098
9097
3080 10K
3081 10K
3082 150R
3083 150R
7081 BC847B
7080 BC337-25
2080 100n
1040
RC5-RECEIVER
INP
CTRL CIRCUIT
AGC
BAND PASS
DEM
PIN
M1
M2
VS
OUT
GND
2040 100u
3040 330R
3041 10K
3042 6K8
3043 470R
9040
9041
9042
9043
RC5
5V-STANDBY
LIGHT_SENSOR
2070 470n
3071 4M7
3074 10K
7070-A LM358N
7070-B LM358N
3075 4K7
3078 3K3
3079 3K3
3070 4M7
2071 10u
3072 1K
3073 3K3
6070 BPW46
LIGHT SENSOR
#ROHM RECEIVER
## MG
8204 000 6627.1
CL 36532008_061.eps
080503

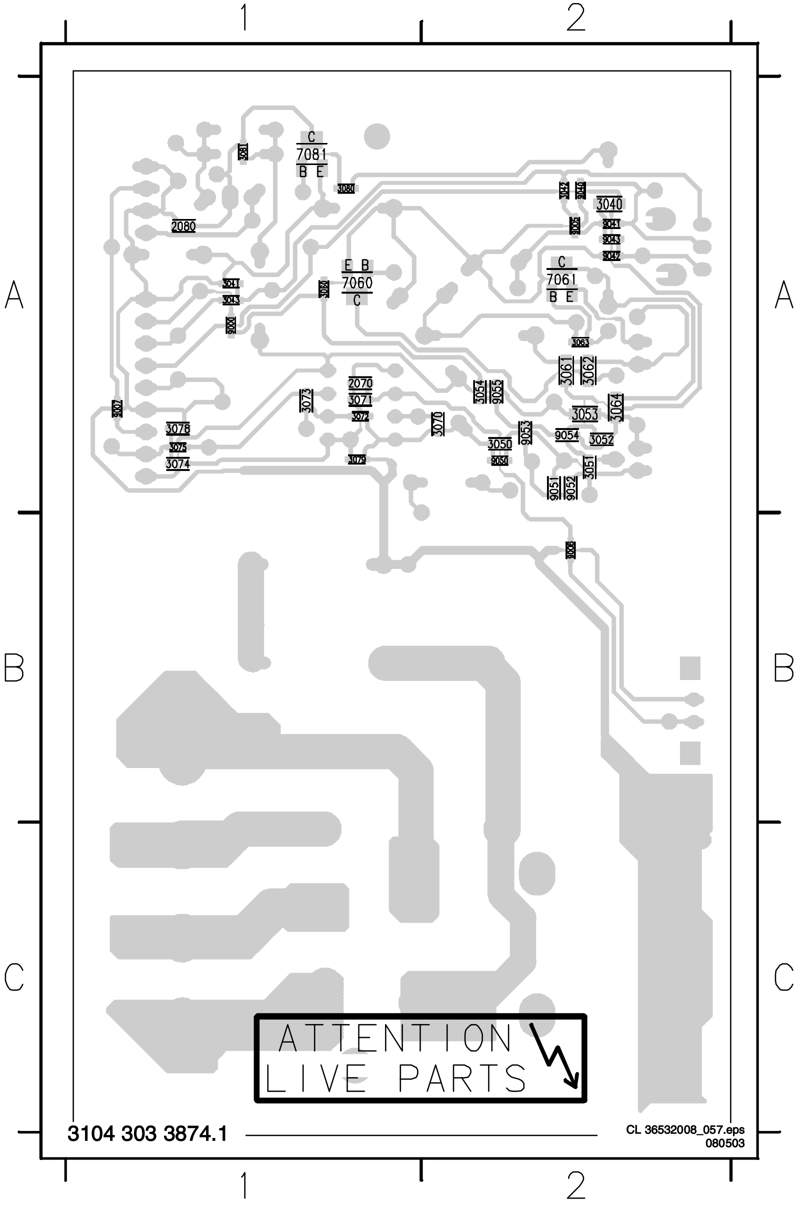
0201	B8
0202	A10
0241	A1
0245	C1
0248	D1
1040	E5
1051	A9
2040	F4
2060	B4
2070	D8
2071	F8
2080	E3
3040	D6
3041	F6
3042	E6
3043	F7
3050	C7
3051	B7
3052	B7
3053	B6
3054	B6
3057	B8
3060	B3
3061	A3
3062	B3
3063	B5
3064	A6
3066	B8
3070	F8
3071	E8
3072	F9
3073	F9
3074	E9
3075	E10
3078	F10
3079	F9
3080	D2
3081	D3
3082	D3
3083	D4
3998	C9
6050	B6
6051	C7
6060	B4
6061	B4
6070	F7
7060	B4
7061	A5
7070-A	E8
7070-B	E9
7080	E3
7081	E3
9040	F6
9041	E6
9042	F6
9043	E6
9050	C7
9051	C6
9052	B6
9053	B6
9054	B6
9055	B6
9096	E1
9097	C9
9098	C9
9099	C9
F001	A2
F002	A2
F003	B2
F004	B2
F005	B2
F006	B2
F007	B2
F008	B1
F009	B2
F010	A8
F011	A8
F012	A9
F013	A9
F014	C9
F015	C10
I001	E2
I002	B8
I003	B8
I004	E3
I005	D3
I006	C7
I007	E5
I008	F6
I009	B3
I010	B3
I011	B3
I012	B7
I013	B4
I014	B5
I015	E9
I016	E8
I017	E8
I018	F9
I019	F10
I020	B6
I021	A5
I022	B7
I023	E6
I024	E6
I025	E3

Layout Mains Switch Panel (Top Side)


1
2
A
B
C
PHILIPS
3083
3082
7080
E B C
9002
2040
2060
9003
1040
9096
9004
0248
0245
0241
6061
6060
6050
2071
7070
3998
3057
3066
6070
ATTENTION
LIVE PARTS
0201
9099
9098
9097
9001
1051
0202
3104 303 3874.1
CL 36532008_058.eps
080503

0201	B2
0202	C2
0241	A2
0245	A2
0248	A2
1040	A1
1051	C2
2040	A1
2060	A1
2071	A1
3057	B2
3066	B2
3082	A2
3083	A2
3998	A1
6050	A1
6051	A1
6060	A1
6061	A1
6070	B1
7070	A2
7080	A2
9001	B2
9002	A2
9003	A1
9004	A2
9096	A2
9097	C1
9098	B1
9099	B1

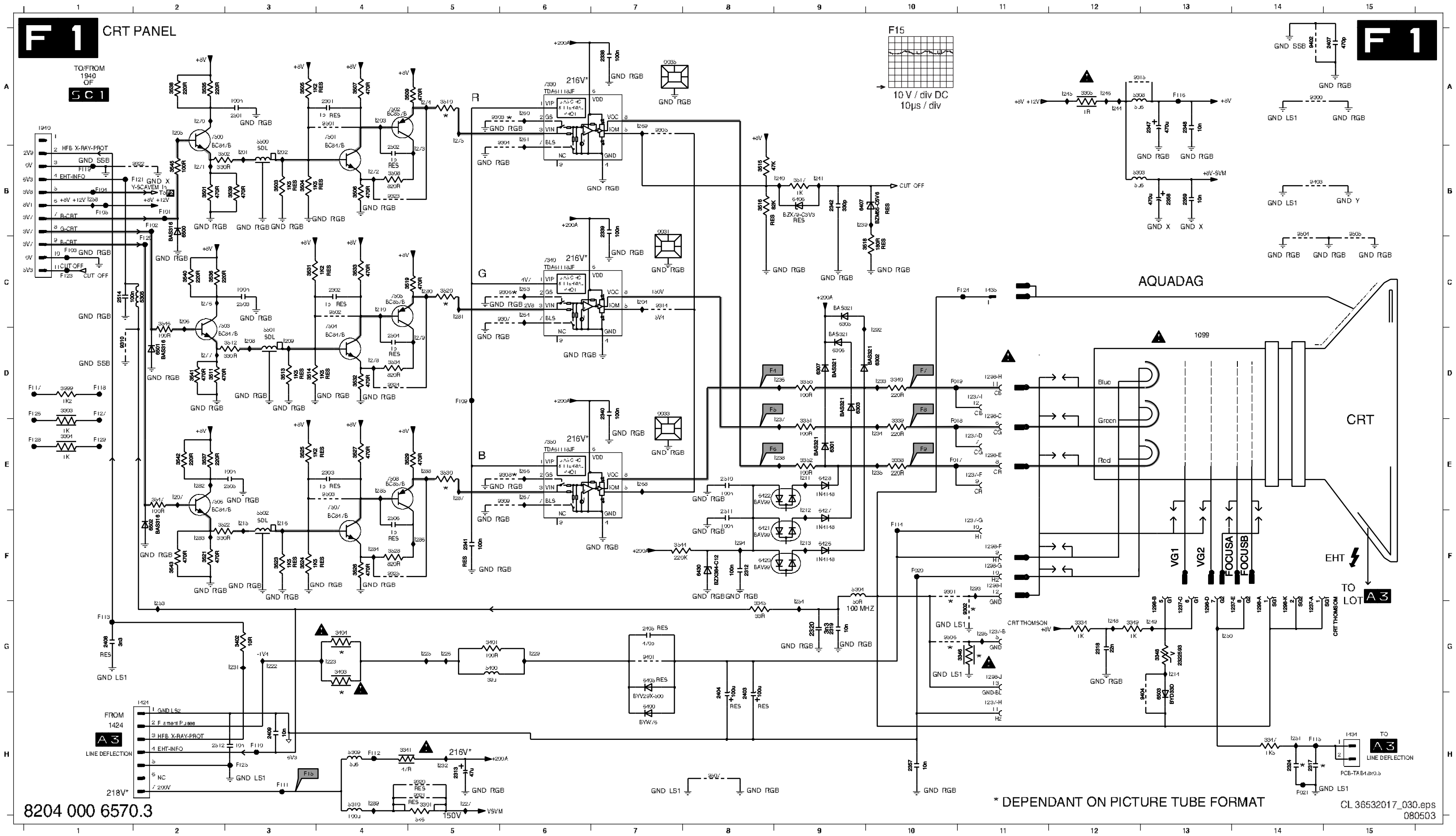
Layout Mains Switch Panel (Bottom Side)


1
2
A
B
C
7081
C
B E
2080
7060
E B
C
7061
C
B E
3040
2070
3071
3073
3076
3075
3074
3070
3054
3055
3050
3053
3052
3061
3062
3064
3051
9051
9052
9054
ATTENTION
LIVE PARTS
3104 303 3874.1
CL 36532008_057.eps
080503

2070	A1
2080	A1
3040	A2
3041	A1
3042	A2
3043	A1
3050	A2
3051	A2
3052	A2
3053	A2
3054	A2
3060	A1
3061	A2
3062	A2
3063	A2
3064	A2
3070	A2
3071	A1
3072	A1
3073	A1
3074	A1
3075	A1
3078	A1
3079	A1
3080	A1
3081	A1
7060	A1
7061	A2
7081	A1
9000	A1
9005	A2
9006	B2
9007	A1
9040	A2
9041	A2
9042	A2
9043	A2
9050	A2
9051	A2
9052	A2
9053	A2
9054	A2
9055	A2

CRT Panel

0031 B7
0033 D7
0035 A7
1237-A F14
1237-B G11
1237-C F13
1237-D E11
1237-E F14
1237-F E11
1237-G F11
1237-H H11
1237-I D11
1298-A F14
1298-B F13
1298-C D11
1298-D F13
1298-E E11
1298-F F11
1298-G F11
1298-H D11
1298-I F11
1298-J G11
1298-K F14
1424 H2
1434 H15
1435 C11
1940 A1
2301 A4
2302 C4
2303 E4
2312 F8
2313 H5
2317 H14
2318 G12
2319 G9
2320 G9
2324 H14
2338 A7
2339 B7
2340 D7
2341 F5
2342 B9
2347 A13
2348 A13
2357 H10
2358 B13
2359 B13
2403 H8
2404 H8
2405 G7
2407 A15
2408 G1
2409 H3
2501 A3
2502 B4
2503 C3
2504 D4
2505 E3
2506 F4
2510 E8
2511 F8
2512 H2
2514 C1
3301 H5
3303 D1
3304 E1
3305 A12
3334 G12
3338 E10
3339 E10
3340 D10
3341 H4
3345 G8
3346 G11
3347 H14
3348 G13
3349 G12
3350 D9
3351 E9
3352 E9
3401 G5
3402 G3
3403 G4
3404 G4
3501 B2
3502 B2
3503 B3
3504 B3
3505 A3
3506 B4
3507 A4
3508 B4
3509 A5
3510 A5
3511 D2
3512 D3
3513 D3
3514 D3
3515 B8
3516 B8
3517 B9
3518 C10
3519 C5
3520 C5
3521 F2
3522 F2
3523 F3
3524 F3
3525 E3
3526 F4
3527 E4
3528 F4
3529 E5
3530 E5
3531 C3
3532 D4
3533 C4
3534 D4
3535 A2
3536 C2
3537 E2
3538 A2
3539 B3
3540 C2
3541 D2
3542 E2
3543 F2
3544 F7
3545 B2
3546 C2
3547 E2
3999 D1
5303 B12
5304 F9
5305 C2
5308 A12
5309 H4
5310 H4
5400 G5
5500 A3
5501 D3
5502 F3
6301 E9
6302 D10
6303 D9
6305 C9
6306 D9
6307 D9
6400 H7
6405 G7
6406 B9
6407 B9
6420 F8
6421 F8
6422 E8
6426 F9
6427 F9
6428 E9
6430 F8
6500 B2
6501 D2
6502 F2
6503 H13
7330 A6
7340 C6
7350 E6
7500 A2
7501 A4
7502 A4
7503 D2
7504 D4
7505 C4
7506 E2
7507 E4
7508 E4
9300 A14
9301 F10
9302 G11
9303 A5
9304 A6
9305 A7
9306 C6
9307 C6
9308 E6
9309 E6
9310 D1
9314 C7
9315 A12
9320 H5
9321 H5
9322 B2
9323 B4
9324 D4
9325 F4
9401 G7
9402 A14
9403 B14
9404 H13
9501 A4
9502 C4
9503 E4
9504 B14
9505 B15
9506 G10
9507 H8
F017 E10
F018 E10
F019 D10
F020 F10
F021 H14
F101 B2
F102 B2
F103 C1
F104 B1
F105 B1
F109 D5
F110 H3
F111 H3
F112 H4
F113 G1
F114 F10
F115 H14
F116 A13
F117 D1
F118 D1
F119 B1
F120 C2
F121 B2
F123 C1
F124 C11
F125 H3
F126 D1
F127 D1
F128 E1
F129 E1
I201 B3
I202 B3
I203 A4
I204 C7
I205 A2
I206 C2
I207 E2
I208 D3
I209 D3
I210 C4
I211 E9
I212 F9
I213 F9
I214 G13
I215 F3
I216 F3
I222 G3
I223 G4
I225 G5
I226 G5
I227 H5
I229 G6
I231 G3
I232 H5
I233 D10
I234 E10
I235 E10
I236 D9
I237 E9
I238 E9
I239 B9
I240 B9
I241 B9
I244 A12
I245 A12
I246 A12
I248 G12
I249 G13
I250 G13
I251 H14
I253 G2
I254 G9
I258 B1
I260 A6
I261 A6
I263 C6
I264 C6
I266 E6
I267 E6
I268 E7
I269 A7
I270 A2
I271 B2
I272 B4
I273 B5
I274 A5
I275 A5
I276 C2
I277 D2
I278 D4
I279 D5
I280 C5
I281 C5
I282 E2
I283 F2
I284 F4
I285 E4
I286 F5
I287 E5
I288 E5
I289 H4
I290 D9
I291 D9
I292 D10
I293 F11
I294 F8
I295 G11


F 1
CRT PANEL
TO/FROM 1940 OF SC1
HFB X-RAY-PROT
GND SSB
EHT-INFO
GND X
Y-SCAVEM
+8V +12V
B-CRT
G-CRT
R-CRT
GND RGB
CUT OFF
R
G
B
216V*
TDA6111JF
VIP
GS
VIN
BLS
VDD
VOC
IOM
NC
GND
BC847B
BC857B
SDL
F15
10 V / div DC
10µs / div
CUT OFF
BZX79-C3V3
BZM55-C8V2
AQUADAG
1099
CRT
Blue
Green
Red
VG1
VG2
FOCUSA
FOCUSB
EHT
TO LOT A3
CRT THOMSON
FROM 1424 A3 LINE DEFLECTION
GND LS2
F x-ray-P ssss
HFB X-RAY-PROT
EHT-INFO
NC
200V
218V*
GND LS1
BYV29X-500
BYW76
BAS321
BAV99
1N4148
BZX384-C12
100 MHZ
TO A3 LINE DEFLECTION
PCB-TAB4x0.5
* DEPENDANT ON PICTURE TUBE FORMAT
8204 000 6570.3
CL 36532017_030.eps
080503
1
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A
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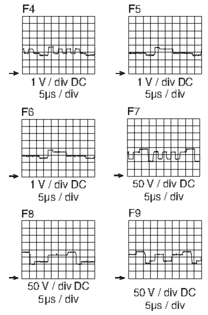
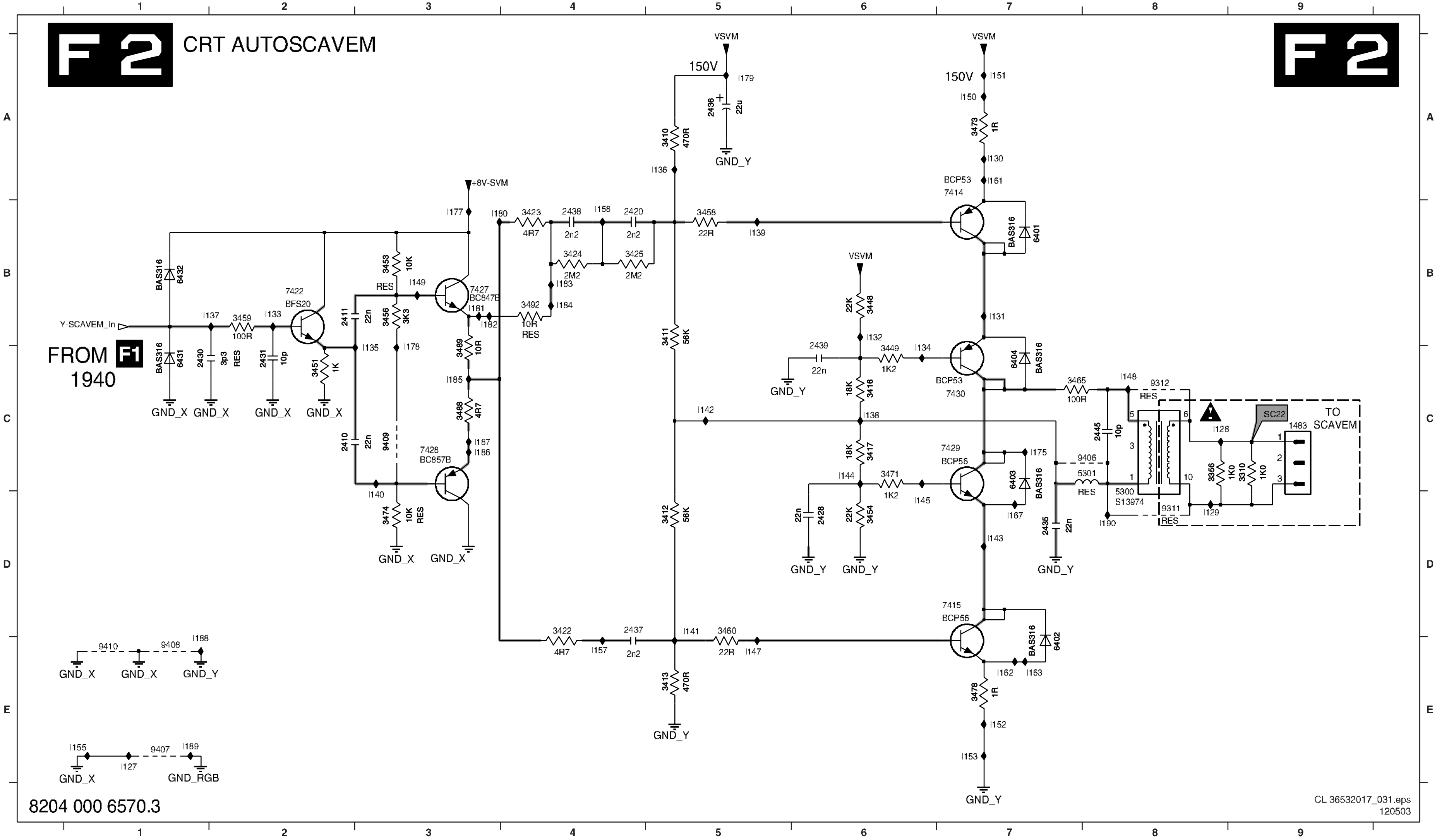
G
H



CRT/ Auto SCAVEM Panel

1483 C9
2410 C2
2411 B2
2420 B4
2428 D6
2430 C1
2431 C2
2435 D7
2436 A5
2437 D4
2438 B4
2439 B6
2445 C8
3310 C9
3356 C8
3410 A5
3411 B5
3412 D5
3413 E5
3416 C6
3417 C6
3422 D4
3423 B4
3424 B4
3425 B4
3448 B6
3449 C6
3451 C2
3453 B3
3454 D6
3456 B3
3458 B5
3459 B2
3460 D5
3465 C7
3471 C6
3473 A7
3474 D3
3478 E7
3488 C3
3489 C3
3492 B4
5300 D8
5301 C8
6401 B7
6402 E7
6403 C7
6404 C7
6431 C1
6432 B1
7414 A7
7415 D7
7422 B2
7427 B3
7428 C3
7429 C7
7430 C7
9311 D8
9312 C8
9406 C8
9407 E1
9408 E1
9409 C3
9410 E1
I127 E1
I128 C8
I129 D8
I130 A7
I131 B7
I132 B6
I133 B2
I134 C6
I135 C3
I136 A5
I137 B1
I138 C6
I139 B5
I140 D3
I141 D5
I142 C5
I143 D7
I144 C6
I145 D6
I147 E5
I148 C8
I149 B3
I150 A7
I151 A7
I152 E7
I153 E7
I155 E1
I157 E4
I158 B4
I161 A7
I162 E7
I163 E7
I167 D7
I175 C7
I177 B3
I178 C3
I179 A5
I180 B3
I181 B3
I182 B3
I183 B4
I184 B4
I185 C3
I186 C3
I187 C3
I188 D1
I189 E1
I190 D8


1
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7
8
9
A
B
C
D
E
F 2
CRT AUTOSCAVEM
F 2
VSVM
150V
I179
2436
22u
GND_Y
3410
470R
I136
VSVM
150V
I151
I150
3473
1R
I130
I161
BCP53
7414
+8V-SVM
I177
I180
3423
4R7
2438
2n2
I158
2420
2n2
3458
22R
I139
BAS316
6401
3424
2M2
3425
2M2
I183
3492
10R
RES
I184
3453
10K
RES
I149
7427
BC847B
I181
I182
BAS316
6432
7422
BFS20
Y-SCAVEM_In
I137
3459
100R
I133
2411
22n
3456
3K3
FROM
F1
1940
BAS316
6431
2430
3p3
RES
2431
10p
3451
1K
I135
I178
3489
10R
I185
GND_X
GND_X
GND_X
GND_X
3488
4R7
I187
I186
7428
BC857B
2410
22n
9409
I140
3474
10K
RES
GND_X
GND_X
3411
56K
I142
VSVM
22K
3448
I132
2439
22n
3449
1K2
I134
GND_Y
BCP53
7430
6404
BAS316
I131
18K
3416
I138
3465
100R
I148
9312
RES
2445
10p
5
6
3
1
10
I128
SC22
1483
TO
SCAVEM
1
2
3
3356
1K0
3310
1K0
9406
5301
RES
5300
S13974
9311
RES
I129
I190
2435
22n
GND_Y
7429
BCP56
I175
18K
3417
I144
3471
1K2
I145
6403
BAS316
I167
2428
22n
22K
3454
GND_Y
GND_Y
I143
3412
56K
7415
BCP56
BAS316
6402
3422
4R7
I157
2437
2n2
I141
3460
22R
I147
I162
I163
3413
470R
GND_Y
3478
1R
I152
I153
GND_Y
9410
9408
I188
GND_X
GND_X
GND_Y
I155
9407
I189
I127
GND_X
GND_RGB
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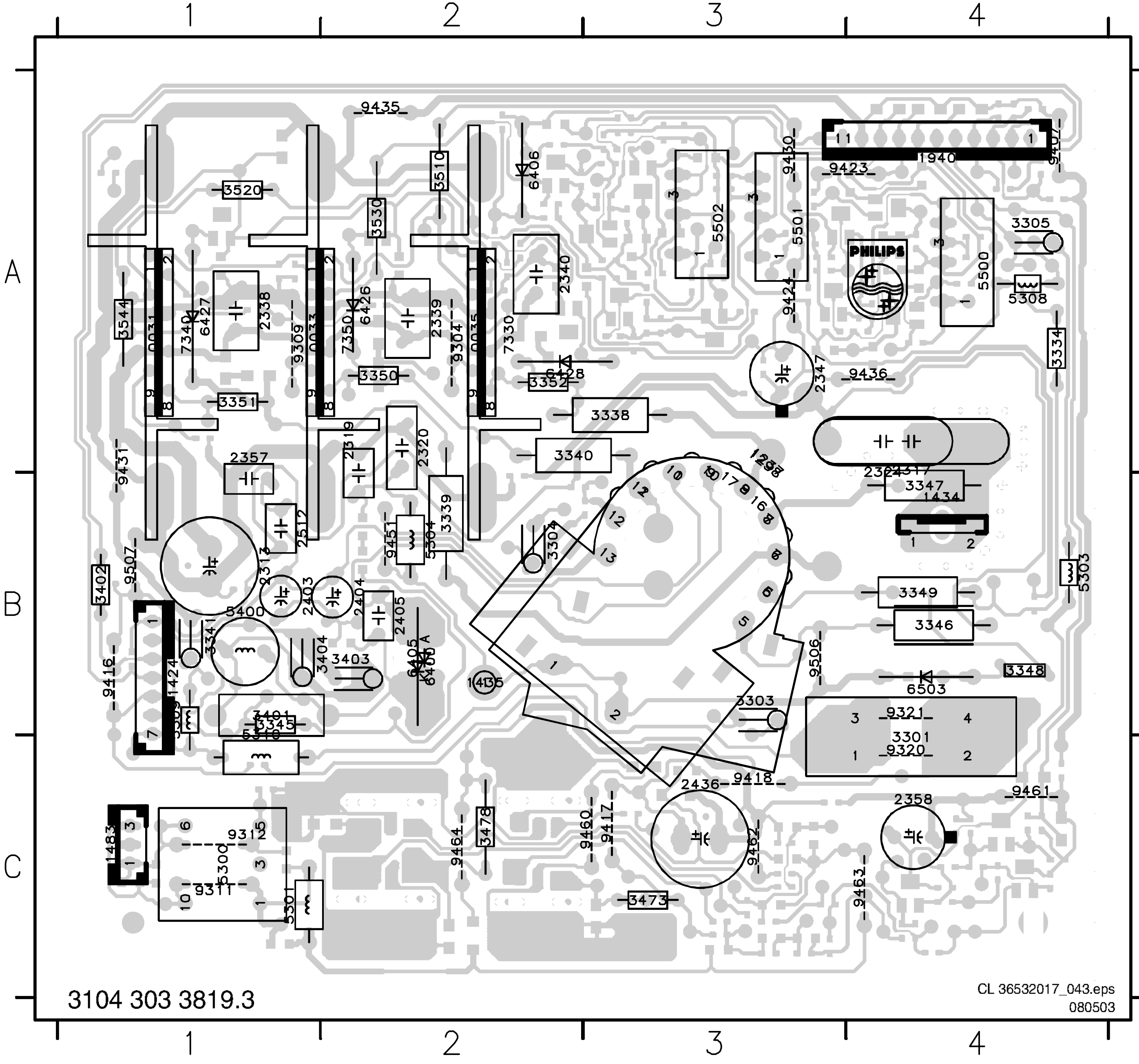
Layout CRT / Auto SCAVEM Panel (Top Side)


1
2
3
4
A
B
C
3104 303 3819.3
CL 36532017_043.eps
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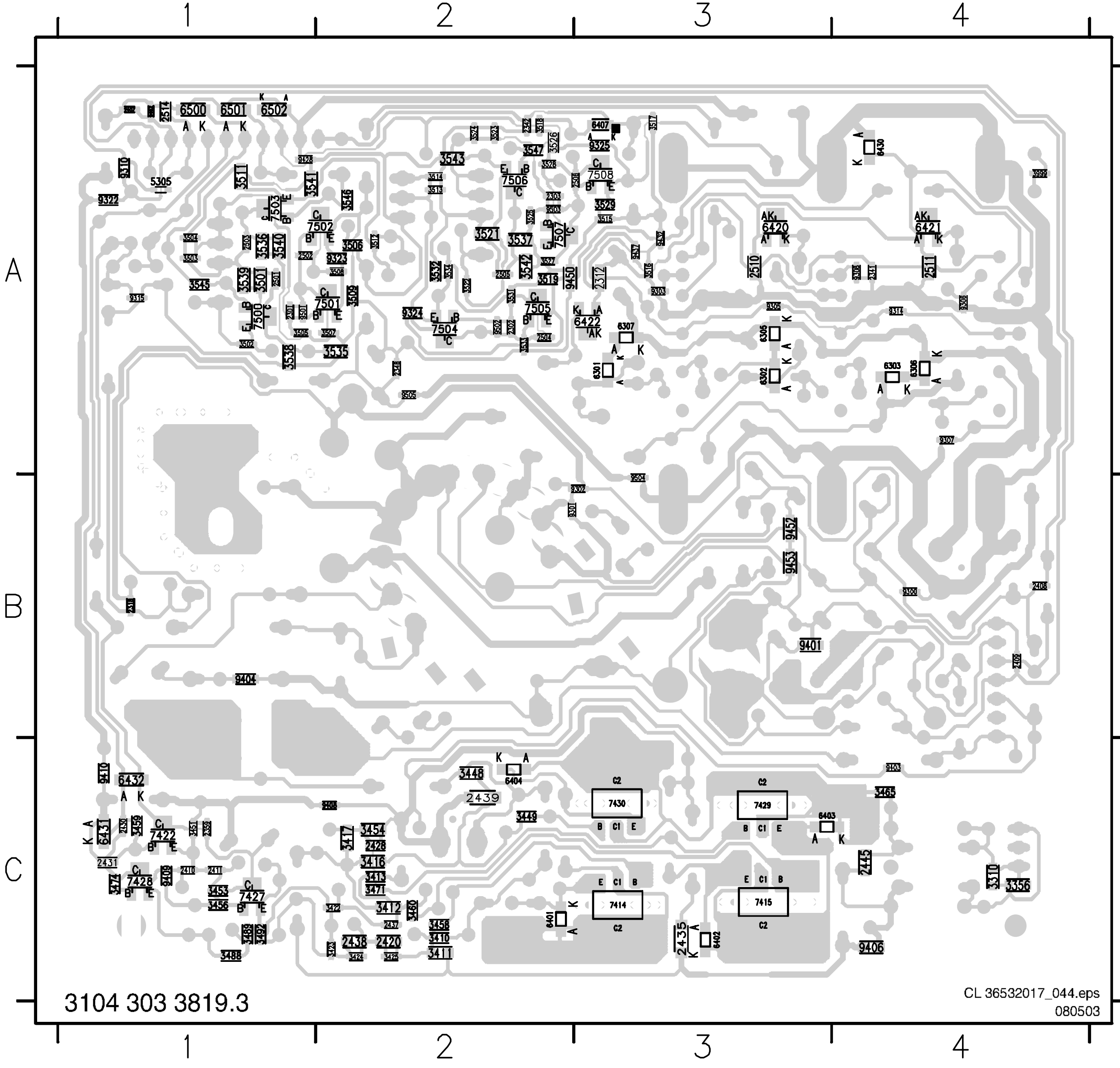
PHILIPS
1940
3520
3544
0031
0033
0035
3530
3510
6406
9435
2338
6427
7340
9309
6426
7350
2339
9304
7330
2340
5502
5501
9430
9423
9407
5500
3305
5308
3334
9424
2347
9436
3350
3351
3352
6428
3338
3340
2357
2319
2320
3339
9431
2512
2313
9451
5304
3304
1237
1298
2324
2317
3347
1434
3349
3346
3348
6503
3303
3301
9321
9320
9506
5303
3402
9507
9416
1424
5400
2403
2404
2405
3341
3404
3403
6405
6400
1435
3401
3345
5310
5309
1483
9312
5300
9311
5301
9464
3478
9460
9417
2436
9418
9462
3473
9463
2358
9461

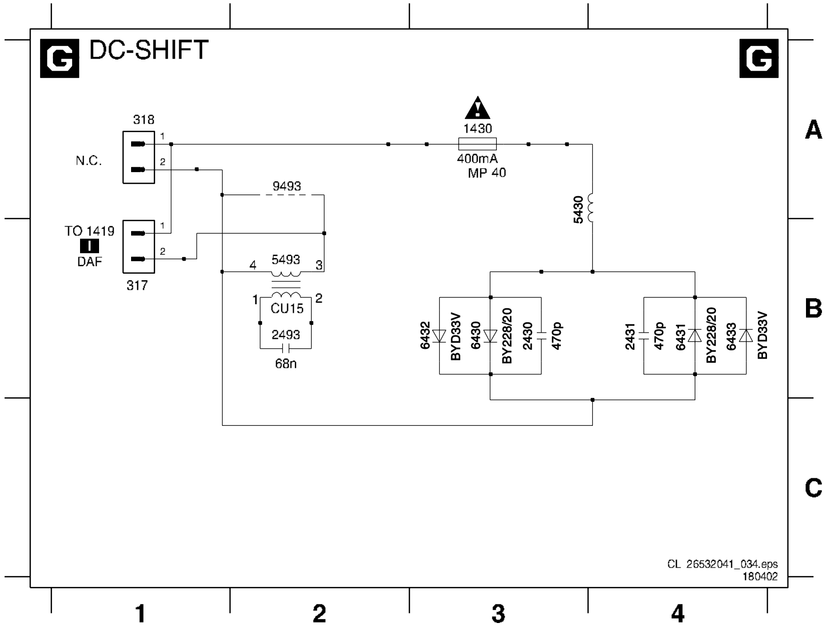
0031	A1	5301	C2
0033	A1	5303	B4
0035	A2	5304	B2
1237	A3	5308	A4
1298	C3	5309	C1
1424	B1	5310	C1
1434	B4	5400	B1
1435	B2	5500	A4
1483	C1	5501	A3
1940	A4	5502	A3
2313	B1	6400	B2
2317	A4	6405	B2
2319	B2	6406	A2
2320	A2	6426	A2
2324	A4	6427	A1
2338	A1	6428	A2
2339	A2	6503	B4
2340	A2	7330	A2
2347	A3	7340	A1
2357	A1	7350	A2
2358	C4	9304	A2
2403	B1	9309	A1
2404	B2	9311	C1
2405	B2	9312	C1
2436	C3	9320	C4
2512	B1	9321	B4
3301	C4	9407	A4
3303	C3	9416	B1
3304	B2	9417	C3
3305	A4	9418	C3
3334	A4	9423	A4
3338	A3	9424	A3
3339	B2	9430	A3
3340	B2	9431	A1
3341	B1	9435	A2
3345	B1	9436	A4
3346	B4	9451	B2
3347	B4	9460	C2
3348	B4	9461	C4
3349	B4	9462	C3
3350	A2	9463	C4
3351	A1	9464	C2
3352	A2	9506	B3
3401	B2	9507	B1
3402	B1		
3403	B2		
3404	B1		
3473	C3		
3478	C2		
3510	A2		
3520	A1		
3530	A2		
3544	A1		
5300	C1		

Layout CRT / Auto SCAVEM Panel (Bottom Side)



2301	A1	3501	A1	6430	A4
2302	A2	3502	A1	6431	C1
2303	A2	3503	A1	6432	C1
2312	A3	3504	A1	6500	A1
2318	B1	3505	A1	6501	A1
2341	A4	3506	A2	6502	A1
2342	A2	3507	A2	7414	C3
2348	A2	3508	A2	7415	C3
2359	C1	3509	A2	7422	C1
2407	A1	3511	A1	7427	C1
2408	B4	3512	A2	7428	C1
2409	B4	3513	A2	7429	C3
2410	C1	3514	A2	7430	C2
2411	C1	3515	A3	7500	A1
2420	C2	3516	A3	7501	A2
2428	C2	3517	A3	7502	A1
2430	C1	3518	A2	7503	A1
2431	C1	3519	A2	7504	A2
2435	C3	3521	A2	7505	A2
2437	C2	3522	A2	7506	A2
2438	C2	3523	A2	7507	A3
2439	C2	3524	A2	7508	A3
2445	C4	3525	A2	9300	B4
2501	A1	3526	A2	9301	B2
2502	A1	3527	A2	9302	B3
2503	A1	3528	A2	9303	A3
2504	A2	3529	A3	9305	A3
2505	A2	3531	A2	9306	A4
2506	A3	3532	A2	9307	A4
2510	A3	3533	A2	9308	A4
2511	A4	3534	A2	9310	A1
2514	A1	3535	A2	9314	A4
3310	C4	3536	A1	9315	A1
3356	C4	3537	A2	9322	A1
3410	C2	3538	A1	9323	A2
3411	C2	3539	A1	9324	A2
3412	C2	3540	A1	9325	A3
3413	C2	3541	A1	9401	B3
3416	C2	3542	A2	9402	A1
3417	C2	3543	A2	9403	C4
3422	C2	3545	A1	9404	B1
3423	C2	3546	A2	9406	C4
3424	C2	3547	A2	9408	C2
3425	C2	3999	A4	9409	C1
3448	C2	5305	A1	9410	C1
3449	C2	6301	A3	9428	A1
3451	C1	6302	A3	9432	A3
3453	C1	6303	A4	9437	A3
3454	C2	6305	A3	9450	A2
3456	C1	6306	A4	9452	B3
3458	C2	6307	A3	9453	B3
3459	C1	6401	C2	9501	A1
3460	C2	6402	C3	9502	A2
3465	C4	6403	C4	9503	A2
3471	C2	6404	C2	9504	B3
3474	C1	6407	A3	9505	A2
3488	C1	6420	A3		
3489	C1	6421	A4		
3492	C1	6422	A2		

DC Shift Panel


G
DC-SHIFT
G
318
N.C.
1
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TO 1419
I
DAF
317
1430
400mA
MP 40
9493
5493
4
3
1
2
CU15
2493
68n
5430
6432
BYD33V
6430
BY228/20
2430
470p
2431
470p
6431
BY228/20
6433
BYD33V
A
B
C
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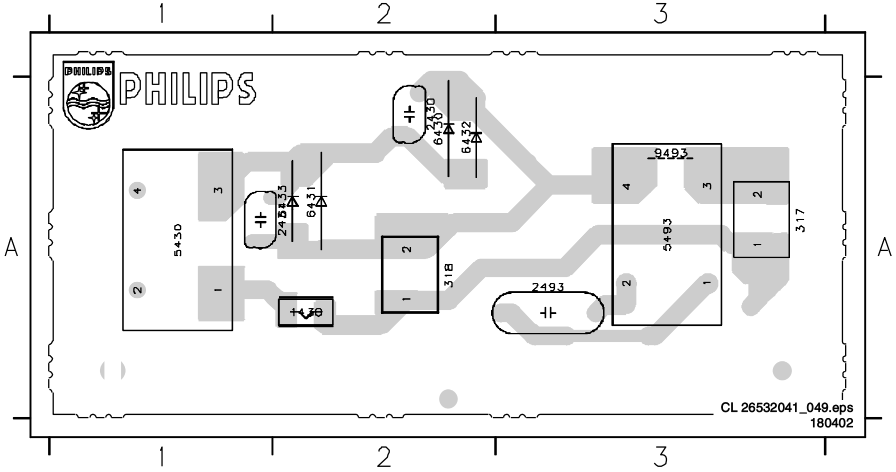
4

CL 26532041_034.eps
180402

317	B1
318	A1
1430	A3
2430	B3
2431	B4
2493	B2
5430	A3
5493	B2
6430	B3
6431	B4
6432	B3
6433	B4

Layout DC Shift Panel

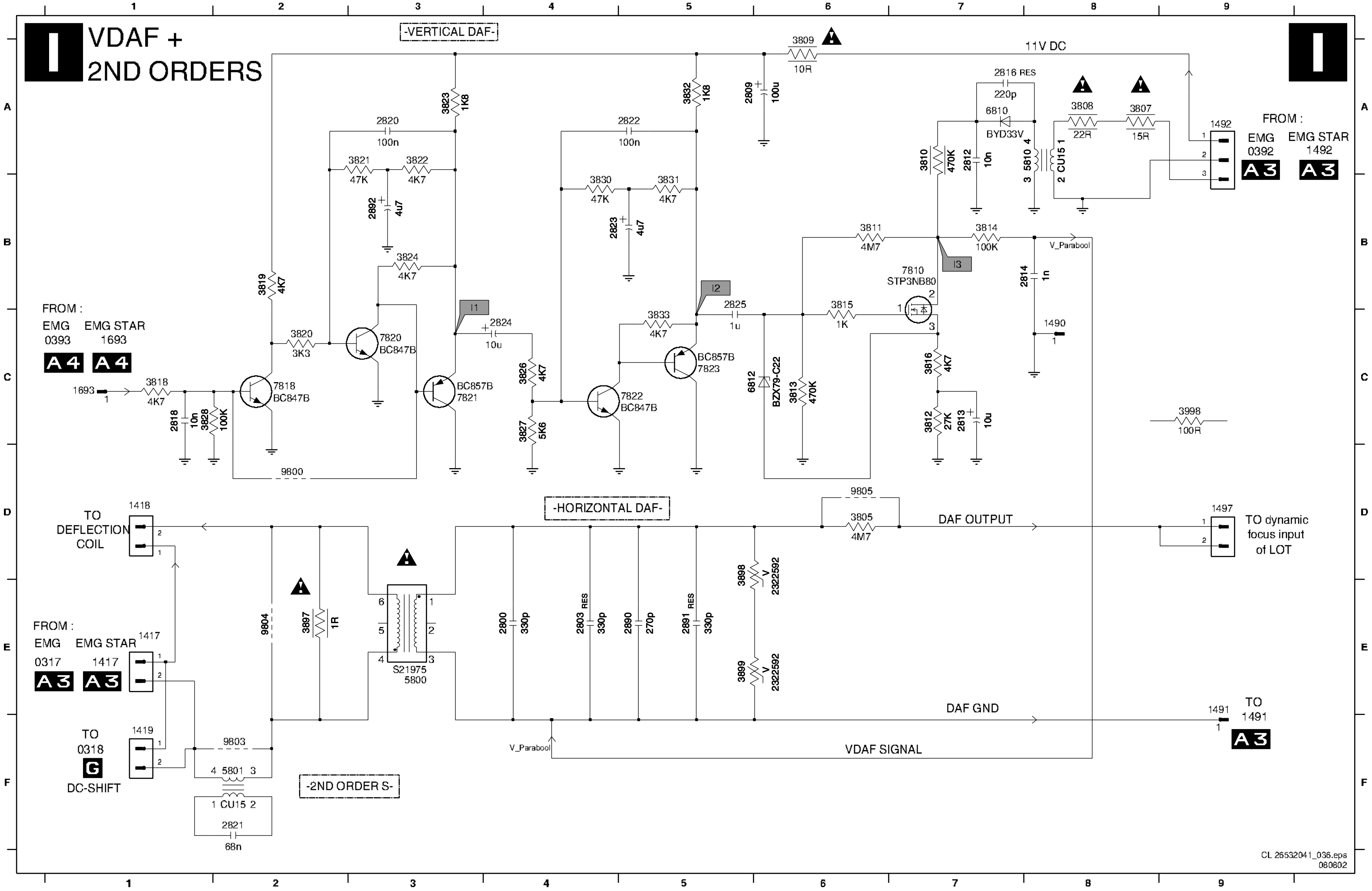
317	A3	2430	A2	5430	A1	6431	A2	9493	A3
318	A2	2431	A1	5493	A3	6432	A2		
1430	A2	2493	A3	6430	A2	6433	A2		


1
2
3
PHILIPS
PHILIPS
5430
4
3
2
1
2433
6431
2430
6430
6432
1430
318
2
1
2493
9493
5493
4
3
2
1
317
2
1
A
A
1
2
3

CL 26532041_049.eps
180402

Personal Notes:

VDAF Panel + 2nd Orders

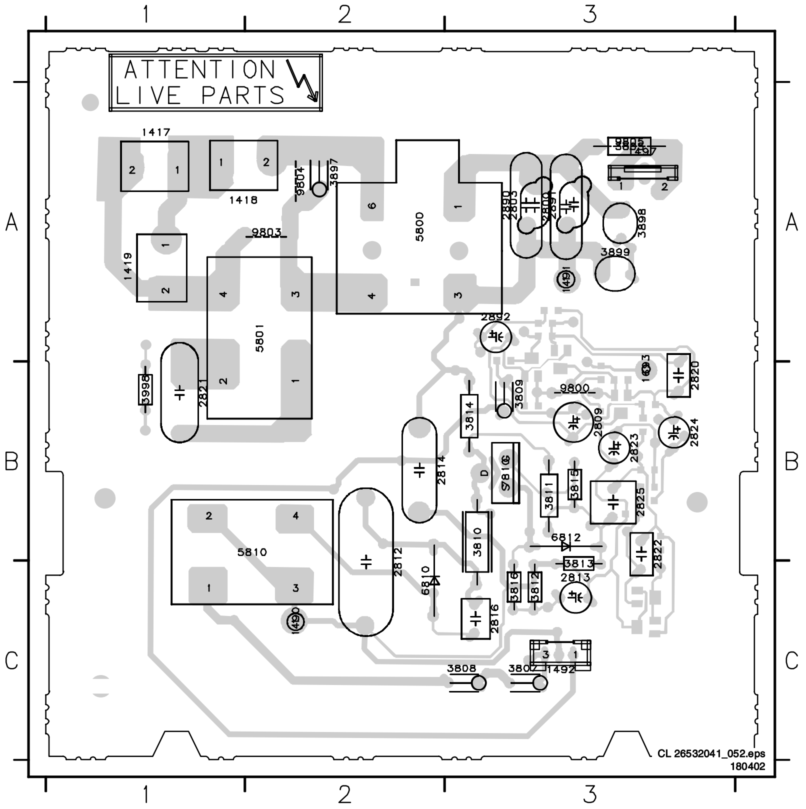

I
VDAF +
2ND ORDERS
-VERTICAL DAF-
-HORIZONTAL DAF-
-2ND ORDER S-
11V DC
FROM :
EMG 0393
EMG STAR 1693
A4
A4
FROM :
EMG 0392
EMG STAR 1492
A3
A3
TO DEFLECTION COIL
1418
FROM :
EMG 0317
EMG STAR 1417
A3
A3
TO 0318
G
DC-SHIFT
1419
TO dynamic focus input of LOT
1497
DAF OUTPUT
DAF GND
VDAF SIGNAL
TO 1491
1491
A3
V_Parabool
3809 10R
2809 100u
2816 RES 220p
6810 BYD33V
3808 22R
3807 15R
5810 CU15
3810 470K
2812 10n
2820 100n
2822 100n
3821 47K
3822 4K7
3823 1K8
3832 1K8
3830 47K
3831 4K7
2892 4u7
2823 4u7
3824 4K7
3819 4K7
3820 3K3
7820 BC847B
7818 BC847B
7821 BC857B
7822 BC847B
7823 BC857B
3818 4K7
1693
2818 10n
3828 100K
2824 10u
3826 4K7
3827 5K6
3833 4K7
2825 1u
6812 BZX79-C22
3813 470K
3815 1K
3811 4M7
3814 100K
2814 1n
1490
7810 STP3NB80
3816 4K7
3812 27K
2813 10u
3998 100R
I1
I2
I3
9800
9805
3805 4M7
9804
3897 1R
S21975 5800
2800 330p
2803 RES 330p
2890 270p
2891 RES 330p
3898 2322592
3899 2322592
9803
5801 CU15
2821 68n
CL 26532041_036.eps 080802

Item	Location
1417	E1
1418	D1
1419	F1
1490	C8
1491	E9
1492	A9
1497	D9
1693	C1
2800	E4
2803	E4
2809	A5
2812	A7
2813	C7
2814	B8
2816	A7
2818	C1
2820	A3
2821	F2
2822	A5
2823	B4
2824	C4
2825	B5
2890	E5
2891	E5
2892	B3
3805	D6
3807	A8
3808	A8
3809	A6
3810	A7
3811	B6
3812	C7
3813	C6
3814	B7
3815	B6
3816	C7
3818	C1
3819	B2
3820	C2
3821	A3
3822	A3
3823	A3
3824	B3
3826	C4
3827	C4
3828	C1
3830	B4
3831	B5
3832	A5
3833	C5
3897	E2
3898	D5
3899	E5
3998	C9
5800	E3
5801	F2
5810	A8
6810	A7
6812	C6
7810	B7
7818	C2
7820	C3
7821	C3
7822	C5
7823	C5
9800	D2
9803	F2
9804	E2
9805	D6

[I] VDAF+2ND ORDER S

Item	29RF	28RF/32RF	34RF/38RF	36RF	Description
1492	X		X	X	3p
1693	X		X	X	1p
2800	X				330pF
2800		X	X		470pF
2800				X	390pF
2809	X		X	X	100uF
2812	X		X	X	10nF
2813	X		X	X	10uF
2814	X		X	X	1nF
2821	X	X			68nF
2822	X		X	X	4nF
2824	X		X	X	10uF
2825	X		X	X	1uF
2890	X				270pF
2890		X			220pF
2890			X		470pF
2890				X	390pF
3807	X		X	X	15R
3808	X		X	X	15R
3809	X		X	X	10R
3810	X		X	X	470kR
3811	X		X	X	4.7MR
3812	X		X	X	27kR
3813	X		X	X	470kR
3814	X		X	X	100kR
3815	X		X	X	1kR
3816	X		X		4.7kR
3816				X	2.2kR
3818	X		X	X	33kR
3820	X		X	X	Jumper
3821	X		X	X	Jumper
3822	X		X	X	Jumper
3823	X		X	X	1.5kR
3824	X		X	X	33kR
3826	X		X	X	3.3kR
3827	X		X	X	5.6kR
3828	X		X	X	100kR
3830	X		X	X	47kR
3831	X		X	X	4.7kR
3832	X		X	X	1.8kR
3833	X		X	X	4.7kR
5801	X	X			Transformer
5810	X		X	X	Bridge coil
6810	X		X	X	BYD33V
6812	X		X	X	BZX79-C22
7810	X		X	X	STP3NB80FP
7818	X		X	X	BC847B
7822	X		X	X	BC847B
7823	X		X	X	BC857B
9800	X		X	X	Wire
9803			X	X	Wire

Layout VDAF Panel (Top Side)


ATTENTION
LIVE PARTS
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B
C
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1418
1419
1490
1491
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1693
2809
2812
2813
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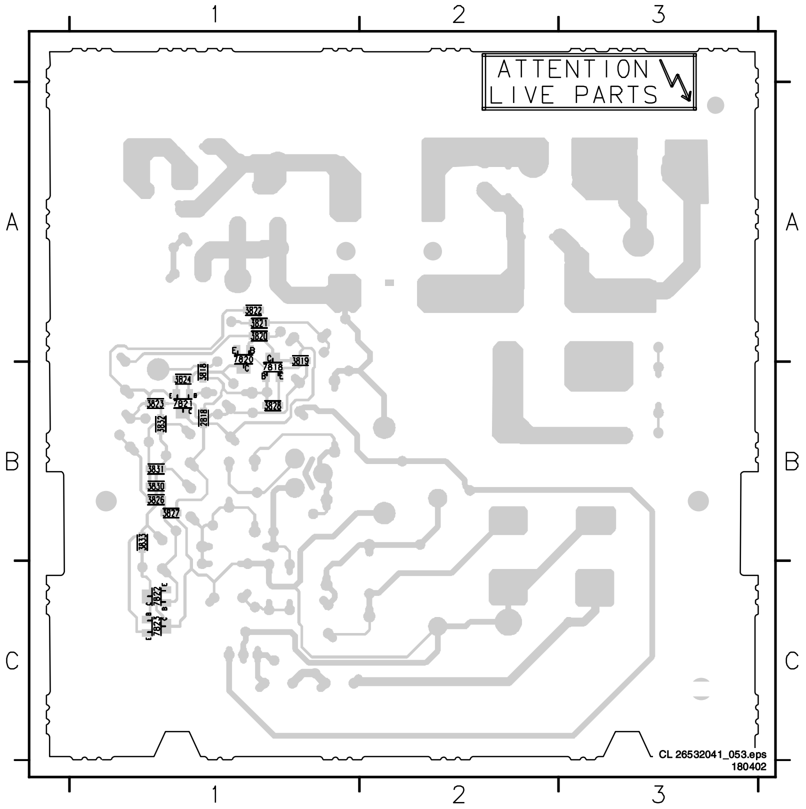
9804
9805

CL 26532041_052.eps
180402

1417	A1
1418	A1
1419	A1
1490	C2
1491	A3
1492	C3
1497	A3
1693	B3
2800	A3
2803	A3
2809	B3
2812	C2
2813	C3
2814	B2
2816	C3
2820	B3
2821	B1
2822	B3
2823	B3
2824	B3
2825	B3
2890	A3
2891	A3
2892	A3
3805	A3
3807	C3
3808	C3
3809	B3
3810	B3
3811	B3
3812	C3
3813	C3
3814	B3
3815	B3
3816	C3
3897	A2
3898	A3
3899	A3
3998	B1
5800	A2
5801	A1
5810	B2
6810	C2
6812	B3
7810	B3
9800	B3
9803	A2
9804	A2
9805	A3

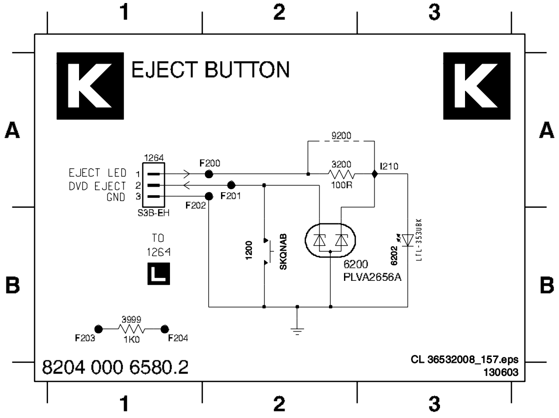
Layout VDAF Panel (Bottom Side)


ATTENTION
LIVE PARTS
1
2
3
A
B
C
3822
3821
3820
7820
7818
3819
3824
3818
3823
7821
2818
3828
3832
3831
3830
3826
3827
3833
7822
7823

CL 26532041_053.eps
180402

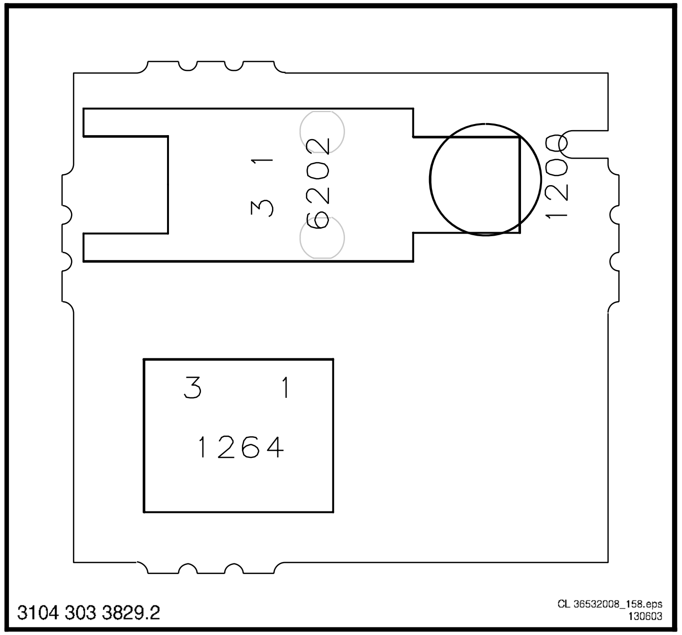
2818	B1
3818	B1
3819	A1
3820	A1
3821	A1
3822	A1
3823	B1
3824	B1
3826	B1
3827	B1
3828	B1
3830	B1
3831	B1
3832	B1
3833	B1
7818	B1
7820	A1
7821	B1
7822	C1
7823	C1

Eject Button


1
2
3
A
B
K
EJECT BUTTON
K
9200
1264
F200
3200
100R
I210
EJECT LED 1
DVD EJECT 2
GND 3
S3B-EH
F202
F201
TO
1264
L
1200
SKQNAB
6200
PLVA2656A
6202
LTL-353UBK
3999
1K0
F203
F204
8204 000 6580.2
CL 36532008_157.eps
130603

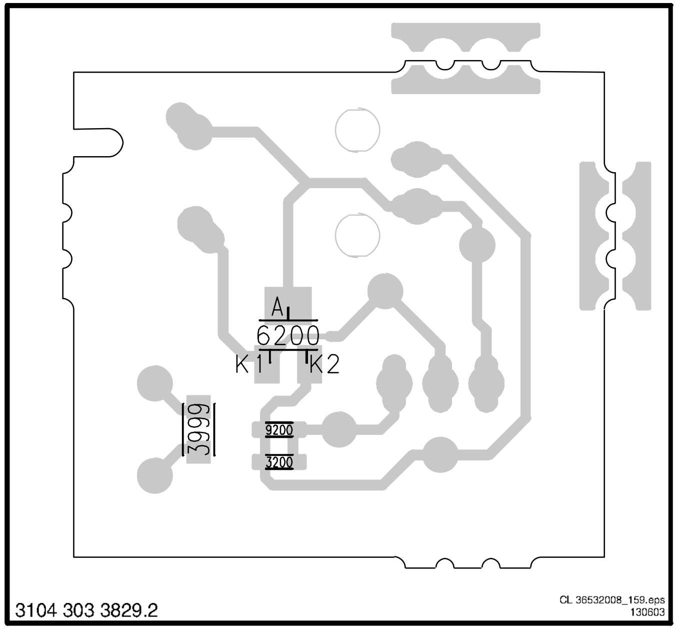
1200	B2
1264	A1
3200	A2
3999	B1
6200	B2
6202	B3
9200	A2
F200	A2
F201	A2
F202	B1
F203	B1
F204	B1
I210	A3

Eject Button (Top Side)


3 1
6202
1200
3 1
1264
3104 303 3829.2
CL 36532008_158.eps
130603

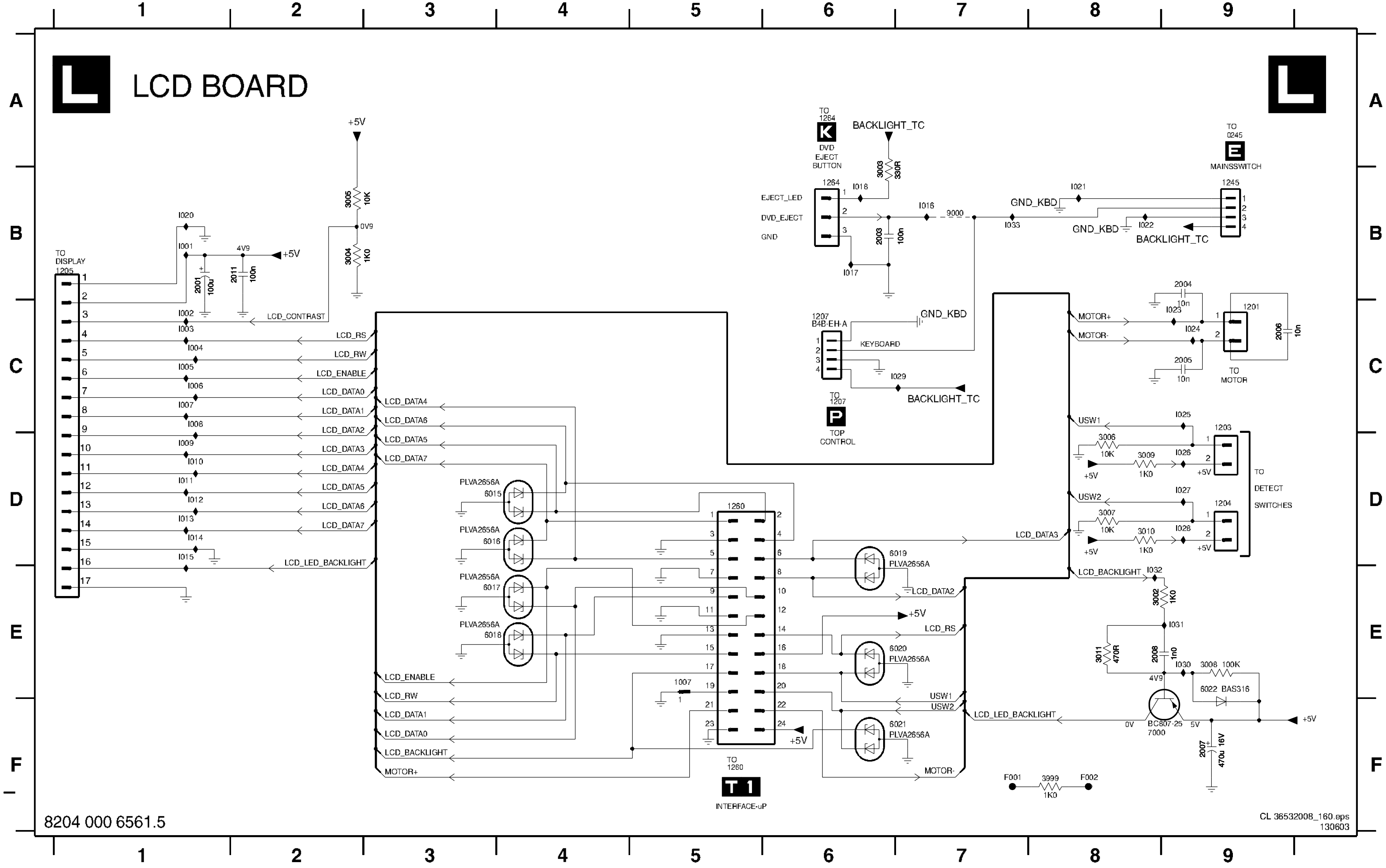
1200
1264
6202

Eject Button (Bottom Side)


A
6200
K1
K2
3999
9200
3200
3104 303 3829.2
CL 36532008_159.eps
130603

3200
3999
6200
9200

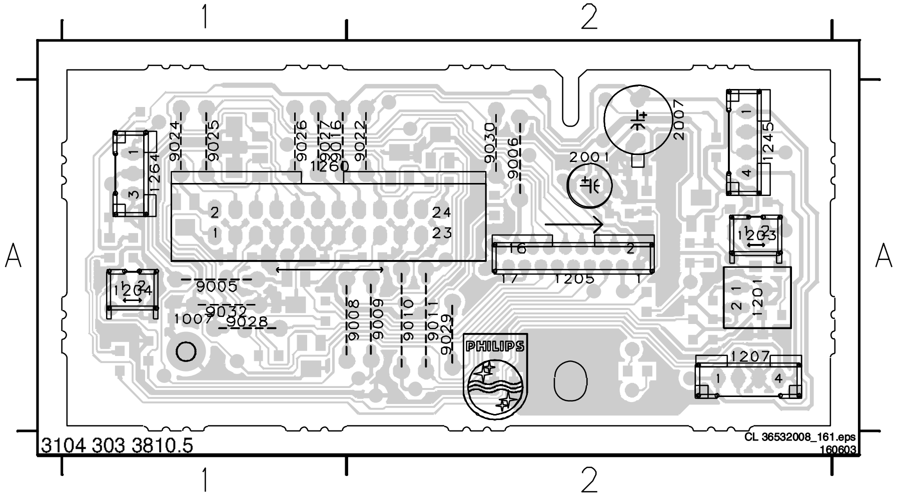
LCD Board


L
LCD BOARD
L
TO DISPLAY 1205
+5V
3005 10K
0V9
3004 1K0
I020
I001
4V9
+5V
2001 100u
2011 100n
LCD_CONTRAST
I002
I003
I004
I005
I006
I007
I008
I009
I010
I011
I012
I013
I014
I015
LCD_RS
LCD_RW
LCD_ENABLE
LCD_DATA0
LCD_DATA1
LCD_DATA2
LCD_DATA3
LCD_DATA4
LCD_DATA5
LCD_DATA6
LCD_DATA7
LCD_LED_BACKLIGHT
PLVA2656A
6015
6016
6017
6018
6019
6020
6021
LCD_BACKLIGHT
MOTOR+
MOTOR-
1260
TO 1260
T 1
INTERFACE-uP
1007
+5V
TO 1264
K
DVD EJECT BUTTON
BACKLIGHT_TC
3003 330R
1264
EJECT_LED
DVD_EJECT
GND
I018
I016
9000
I017
2003 100n
I033
GND_KBD
I021
I022
BACKLIGHT_TC
TO 0245
E
MAINSSWITCH
1245
1207 B4B-EH-A
KEYBOARD
I029
BACKLIGHT_TC
TO 1207
P
TOP CONTROL
2004 10n
I023
I024
1201
2006 10n
2005 10n
TO MOTOR
USW1
USW2
I025
3006 10K
3009 1K0
I026
1203
I027
3007 10K
3010 1K0
I028
1204
TO DETECT SWITCHES
I032
3002 1K0
I031
3011 470R
2008 1n0
I030
3008 100K
4V9
6022 BAS316
BC807-25 7000
0V
5V
+5V
2007 470u 16V
F001
3999 1K0
F002
8204 000 6561.5
CL 36532008_160.eps 130603
1 2 3 4 5 6 7 8 9
A B C D E F

1007	E5
1201	C9
1203	C9
1204	D9
1205	B1
1207	C6
1245	B9
1260	D5
1264	B6
2001	B1
2003	B6
2004	B9
2005	C9
2006	C9
2007	F9
2008	E8
2011	B2
3002	E8
3003	B6
3004	B2
3005	B2
3006	D8
3007	D8
3008	E9
3009	D8
3010	D8
3011	E8
3999	F8
6015	D4
6016	D4
6017	E4
6018	E4
6019	D6
6020	E6
6021	F6
6022	E9
7000	F8
9000	B7
F001	F7
F002	F8
I001	B1
I002	C1
I003	C1
I004	C1
I005	C1
I006	C1
I007	C1
I008	C1
I009	D1
I010	D1
I011	D1
I012	D1
I013	D1
I014	D1
I015	D1
I016	B7
I017	B6
I018	B6
I020	B1
I021	B8
I022	B8
I023	C9
I024	C9
I025	C9
I026	D9
I027	D9
I028	D9
I029	C7
I030	E9
I031	E9
I032	E8
I033	B7

Layout LCD Board (Top Side)

1007 A1	1205 A2	1264 A1	9006 A2	9011 A2	9025 A1	9029 A2
1201 A2	1207 A2	2001 A2	9008 A2	9016 A1	9026 A1	9030 A2
1203 A2	1245 A2	2007 A2	9009 A2	9022 A2	9027 A1	9032 A1
1204 A1	1260 A1	9005 A1	9010 A2	9024 A1	9028 A1	

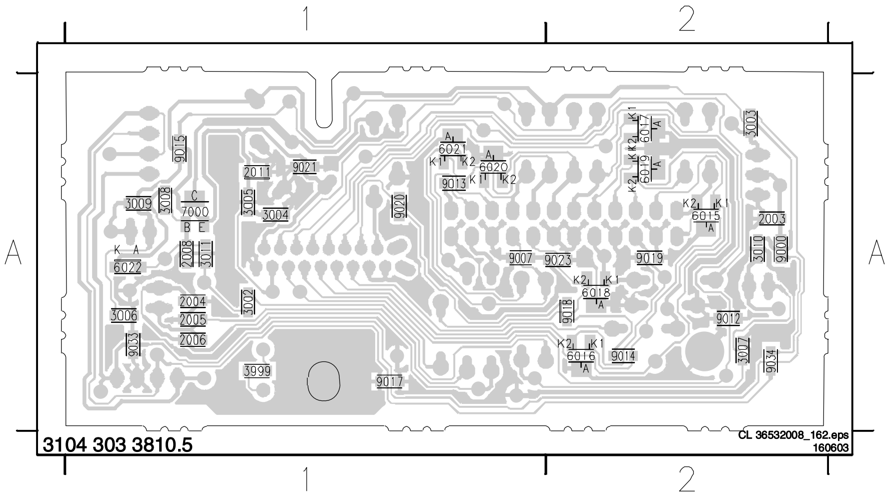

1
2
A
1264
9024
9025
9026
9027
9016
1260
9022
9030
9006
2001
2007
1245
1203
1201
1205
16
17
24
23
9005
9032
1007
9028
9008
9009
9010
9011
9029
PHILIPS
1207
1204

3104 303 3810.5

CL 36532008_161.eps
160603

Layout LCD Board (Bottom Side)

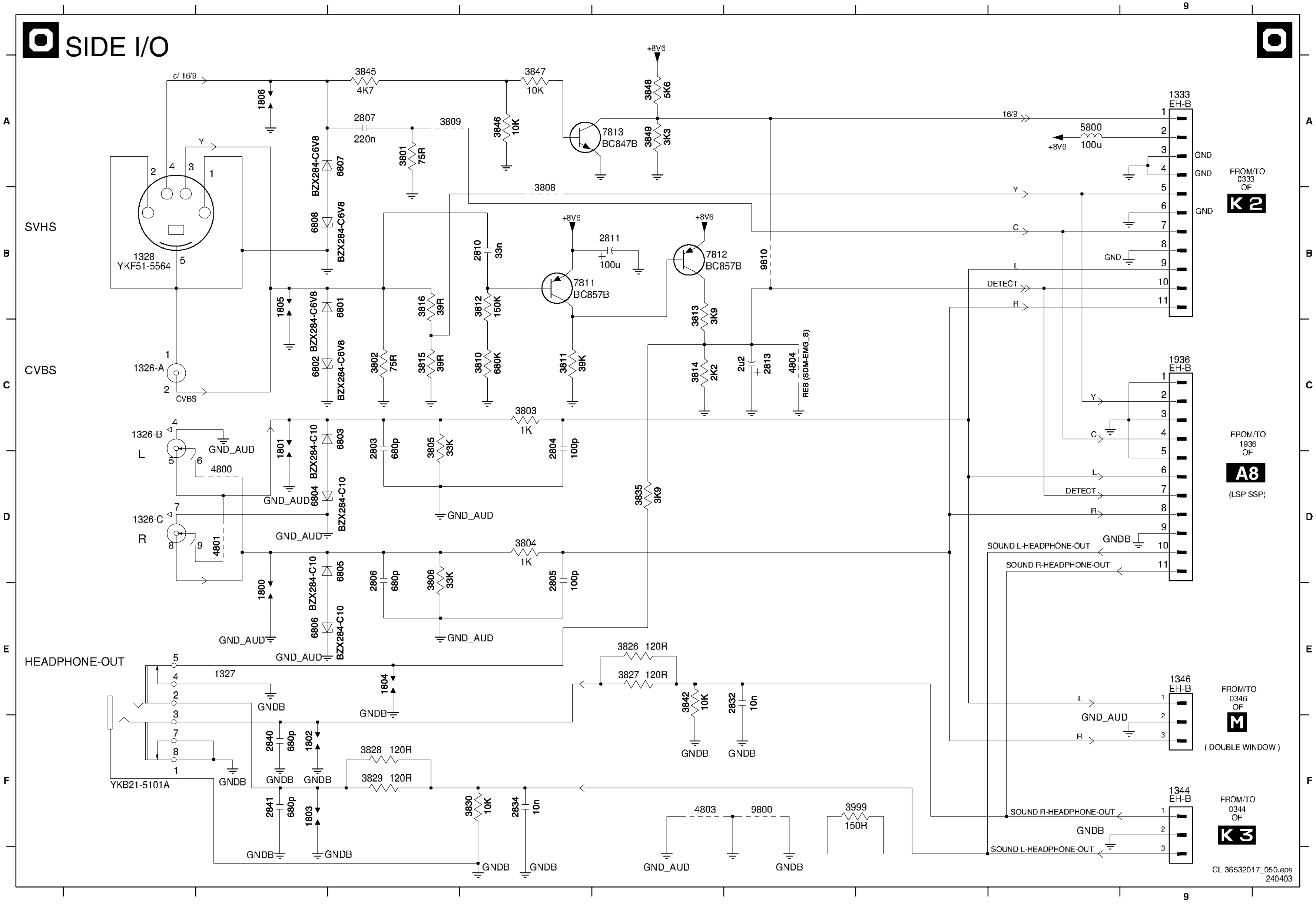
1007 A2	1207 A1	2003 A2	2008 A1	3005 A1	3010 A2	6017 A2	6022 A1	9007 A1	9012 A2	9017 A1	9022 A1	9027 A2	9033 A1
1201 A1	1245 A1	2004 A1	2011 A1	3006 A1	3011 A1	6018 A2	7000 A1	9008 A1	9013 A1	9018 A2	9023 A2	9028 A2	9034 A2
1203 A1	1260 A2	2005 A1	3002 A1	3007 A2	3999 A1	6019 A2	9000 A2	9009 A1	9014 A2	9019 A2	9024 A2	9029 A1	
1204 A2	1264 A2	2006 A1	3003 A2	3008 A1	6015 A2	6020 A1	9005 A2	9010 A1	9015 A1	9020 A1	9025 A2	9030 A1	
1205 A1	2001 A1	2007 A1	3004 A1	3009 A1	6016 A2	6021 A1	9006 A1	9011 A1	9016 A1	9021 A1	9026 A2	9032 A2	


1
2
A
9015
2011
9021
6021
6020
9013
6017
6019
3003
3009
3008
7000
3005
3004
9020
6015
2003
6022
2008
3011
9007
9023
9019
3010
9000
6018
9018
3002
2004
2005
2006
3006
9033
9012
6016
9014
3007
9034
3999
9017

3104 303 3810.5

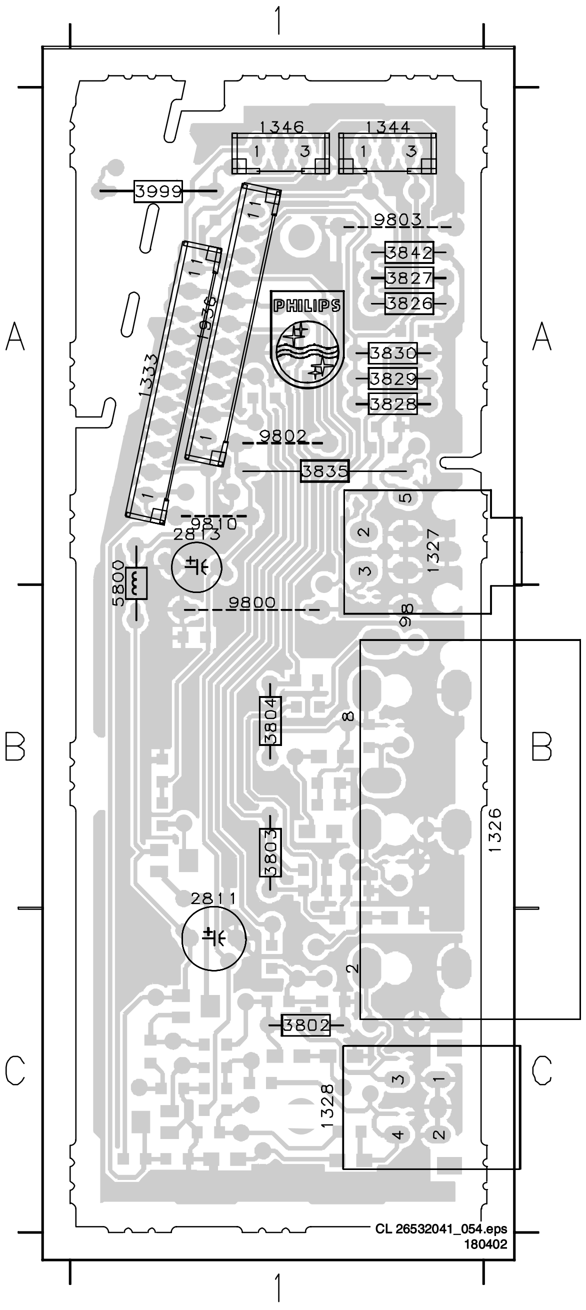
CL 36532008_162.eps
160603

Side I/O Panel


SIDE I/O
SVHS
CVBS
HEADPHONE-OUT
1328
YKF51-5564
1326-A
1326-B
1326-C
L
R
GND_AUD
4800
4801
1327
YKB21-5101A
GNDB
c/ 16/9
Y
CVBS
1806
1805
1801
1800
1804
1802
1803
3845 4K7
3847 10K
2807 220n
3809
3801 75R
3846 10K
7813 BC847B
+8V6
3848 5K6
3849 3K3
6807 BZX284-C6V8
6808 BZX284-C6V8
6801 BZX284-C6V8
6802 BZX284-C6V8
6803 BZX284-C10
6804 BZX284-C10
6805 BZX284-C10
6806 BZX284-C10
3808
2810 33n
2811 100u
7811 BC857B
7812 BC857B
9810
3816 39R
3815 39R
3812 150K
3810 680K
3802 75R
3811 39K
3813 3K9
3814 2K2
2813 2u2
4804 RES (SDM-EMG_S)
3803 1K
3804 1K
2803 680p
3805 33K
2804 100p
2806 680p
3806 33K
2805 100p
3835 3K9
3826 120R
3827 120R
3842 10K
2832 10n
2840 680p
2841 680p
3828 120R
3829 120R
3830 10K
2834 10n
4803
9800
3999 150R
GND_AUD
GNDB
1333 EH-B
16/9
5800 100u
+8V6
GND
Y
C
L
DETECT
R
FROM/TO 0333 OF
K2
1936 EH-B
FROM/TO 1936 OF
A8
(LSP SSP)
SOUND L-HEADPHONE-OUT
SOUND R-HEADPHONE-OUT
1346 EH-B
FROM/TO 0346 OF
M
(DOUBLE WINDOW)
1344 EH-B
FROM/TO 0344 OF
K3
A
B
C
D
E
F
9
CL 36532017_050.eps
240403

1326-A	C1
1326-B	C1
1326-C	D1
1327	E2
1328	B1
1333	A9
1344	F9
1346	E9
1800	E2
1801	C2
1802	F2
1803	F2
1804	E3
1805	B2
1806	A2
1936	C9
2803	C3
2804	C4
2805	D4
2806	D3
2807	A3
2810	B4
2811	B5
2813	C6
2832	E6
2834	F4
2840	F2
2841	F2
3801	A3
3802	C3
3803	C4
3804	D4
3805	C3
3806	D3
3808	B4
3809	A3
3810	C4
3811	C4
3812	B4
3813	B5
3814	C5
3815	C3
3816	B3
3826	E5
3827	E5
3828	F3
3829	F3
3830	F4
3835	D5
3842	E5
3845	A3
3846	A4
3847	A4
3848	A5
3849	A5
3999	F7
4800	D2
4801	D2
4803	F5
4804	C6
5800	A8
6801	B3
6802	C2
6803	C3
6804	D2
6805	D3
6806	E2
6807	A3
6808	B2
7811	B4
7812	B5
7813	A5
9800	F6
9810	B6

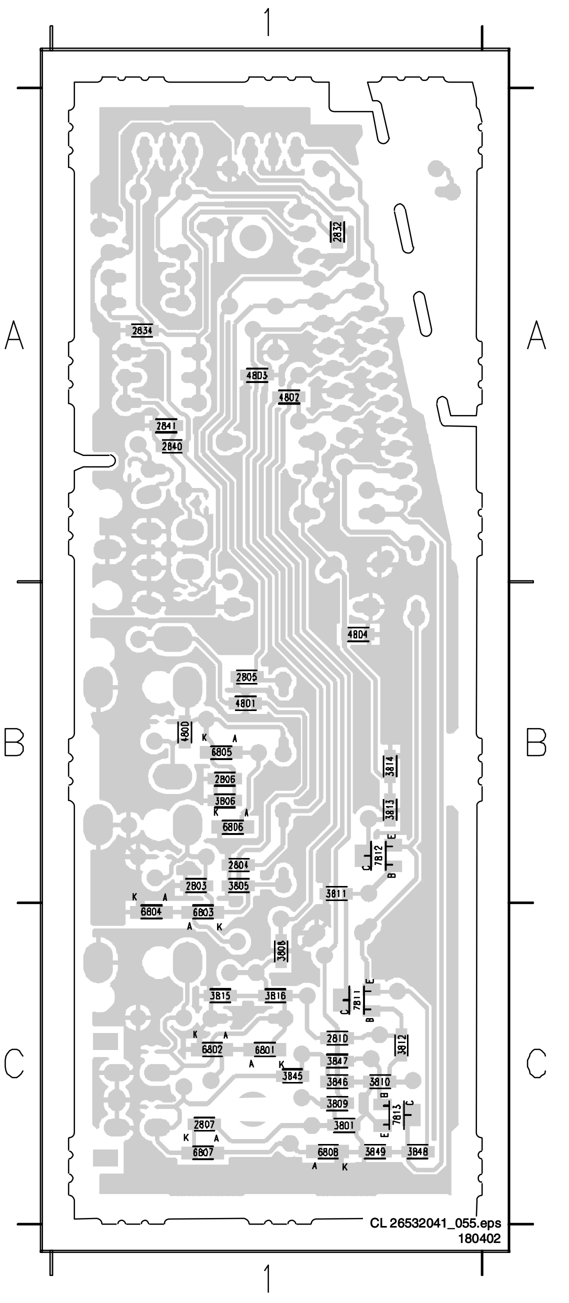
Layout Side I/O Panel (Top Side)


1
A
B
C
1346
1344
3999
9803
3842
3827
3826
1936
1333
PHILIPS
3830
3829
3828
9802
3835
9810
2813
5800
9800
1327
3804
1326
3803
2811
3802
1328

CL 26532041_054.eps
180402

1326	B1
1327	A1
1328	C1
1333	A1
1344	A1
1346	A1
1936	A1
2811	B1
2813	A1
3802	C1
3803	B1
3804	B1
3826	A1
3827	A1
3828	A1
3829	A1
3830	A1
3835	A1
3842	A1
3999	A1
5800	A1
9800	B1
9802	A1
9803	A1
9810	A1

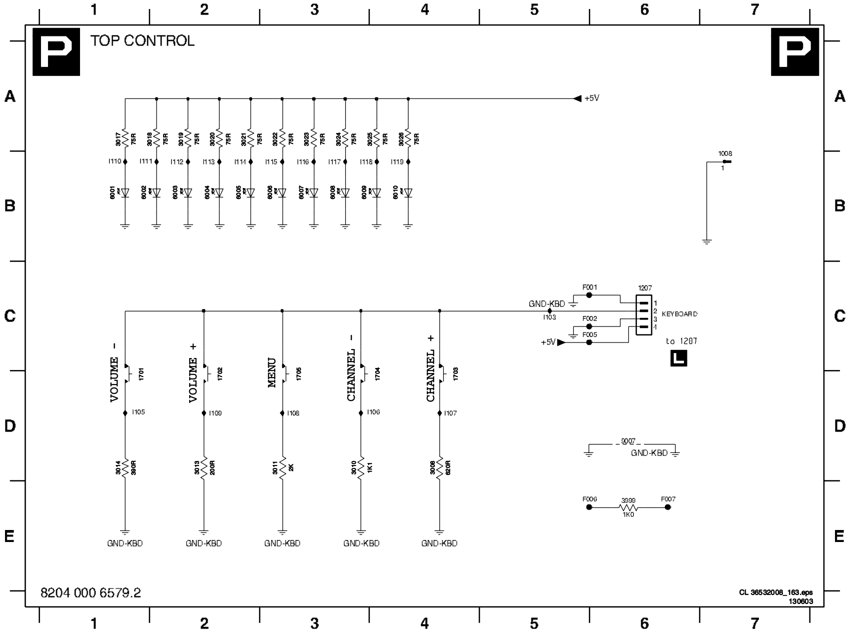
Layout Side I/O Panel (Bottom Side)


1
A
B
C
2832
2834
4803
4802
2841
2840
4804
2805
4801
4800
6805
2806
3806
6806
3814
3813
7812
2804
2803
3805
6804
6803
3811
3808
3815
3816
7811
2810
3812
6802
6801
3847
3845
3846
3810
3809
7813
3801
2807
6807
6808
3849
3848

CL 26532041_055.eps
180402

2803	B1
2804	B1
2805	B1
2806	B1
2807	C1
2810	C1
2832	A1
2834	A1
2840	A1
2841	A1
3801	C1
3805	B1
3806	B1
3808	C1
3809	C1
3810	C1
3811	B1
3812	C1
3813	B1
3814	B1
3815	C1
3816	C1
3845	C1
3846	C1
3847	C1
3848	C1
3849	C1
4800	B1
4801	B1
4802	A1
4803	A1
4804	B1
6801	C1
6802	C1
6803	B1
6804	C1
6805	B1
6806	B1
6807	C1
6808	C1
7811	C1
7812	B1
7813	C1

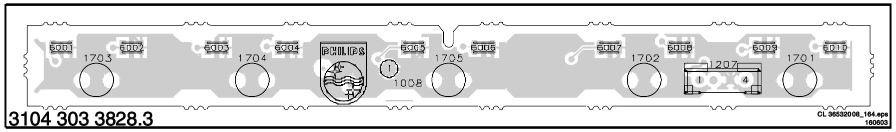
Top Control Panel


P
TOP CONTROL
P
1
2
3
4
5
6
7
A
B
C
D
E
+5V
3017 75R
3018 75R
3019 75R
3020 75R
3021 75R
3022 75R
3023 75R
3024 75R
3025 75R
3026 75R
I110
I111
I112
I113
I114
I115
I116
I117
I118
I119
6001
6002
6003
6004
6005
6006
6007
6008
6009
6010
1008
1
F001
1207
GND-KBD
I103
F002
F005
+5V
1
2
3
4
KEYBOARD
to 1207
L
VOLUME -
1701
VOLUME +
1702
MENU
1705
CHANNEL -
1704
CHANNEL +
1703
I105
I109
I108
I106
I107
3014 390R
3013 200R
3011 2K
3010 1K1
3008 620R
GND-KBD
GND-KBD
GND-KBD
GND-KBD
GND-KBD
9007
GND-KBD
F006
3999
1K0
F007
8204 000 6579.2
CL 36532008_163.eps
130603

1008	B7
1207	C6
1701	D1
1702	D2
1703	D4
1704	D4
1705	D3
3008	D4
3010	D3
3011	D3
3013	D2
3014	D1
3017	A1
3018	A2
3019	A2
3020	A2
3021	A2
3022	A3
3023	A3
3024	A3
3025	A4
3026	A4
3999	E6
6001	B1
6002	B1
6003	B2
6004	B2
6005	B2
6006	B3
6007	B3
6008	B3
6009	B3
6010	B4
9007	D6
F001	C5
F002	C5
F005	C5
F006	E5
F007	E6
I103	C5
I105	D1
I106	D4
I107	D4
I108	D3
I109	D2
I110	B1
I111	B1
I112	B2
I113	B2
I114	B2
I115	B3
I116	B3
I117	B3
I118	B3
I119	B4

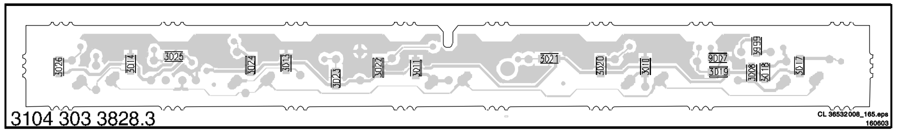
Top Control Panel (Top Side)

1008 – 1701 – 1703 – 1705 – 6002 – 6004 – 6006 – 6008 – 6010 –
1207 – 1702 – 1704 – 6001 – 6003 – 6005 – 6007 – 6009 –

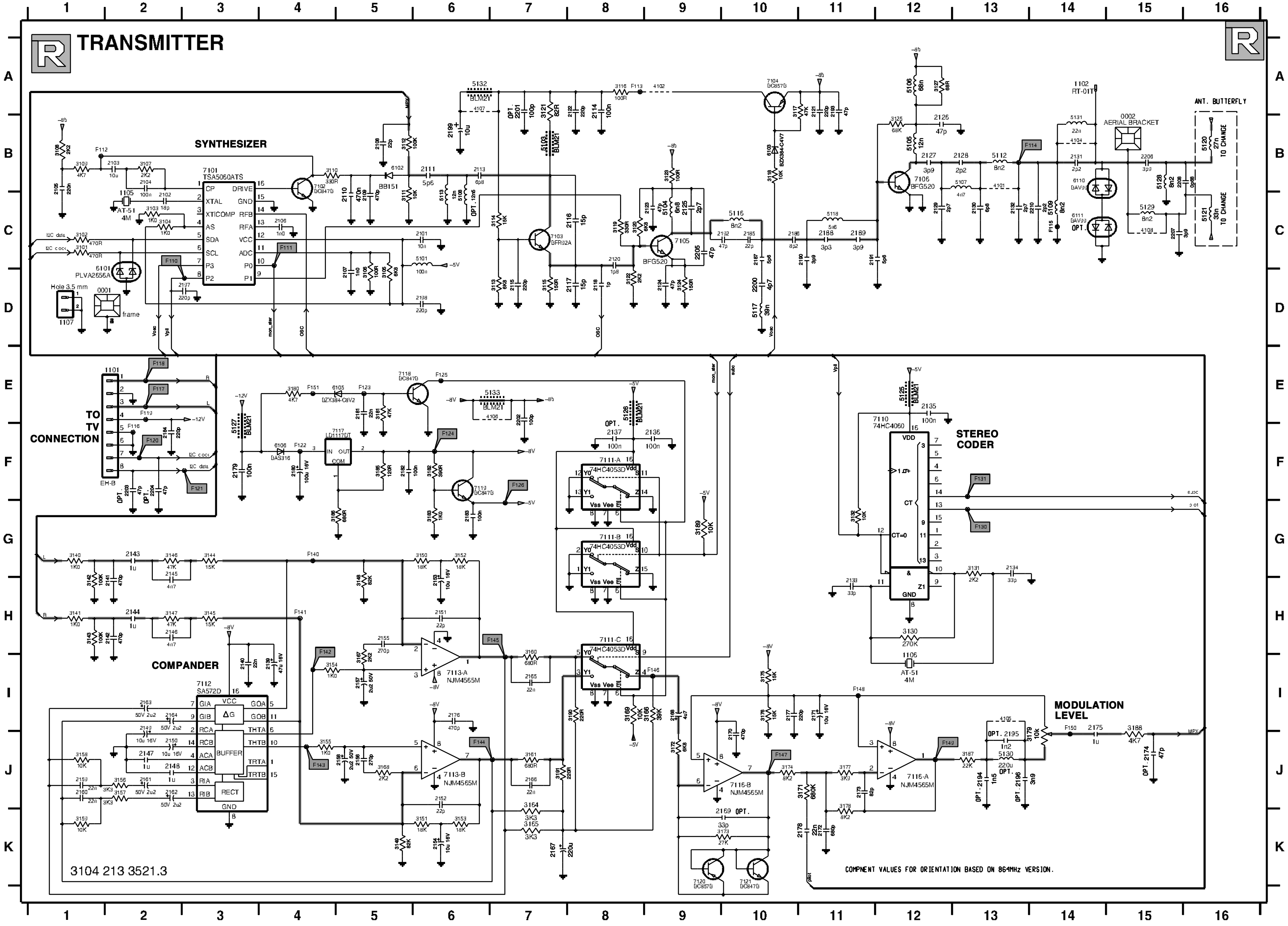

6001
1703
6002
6003
1704
6004
PHILIPS
6005
1705
6006
1008
6007
1702
6008
1207
1
4
6009
1701
6010
3104 303 3828.3
CL 36532008_164.eps
160603

Top Control Panel (Bottom Side)

1008 – 1701 – 1703 – 1705 – 3010 – 3013 – 3017 – 3019 – 3021 – 3023 – 3025 – 3999 –
1207 – 1702 – 1704 – 3008 – 3011 – 3014 – 3018 – 3020 – 3022 – 3024 – 3026 – 9007 –


3026
3014
3025
3024
3013
3023
3022
3011
3021
3020
3011
9007
3019
3999
3017
3104 303 3828.3
CL 36532008_165.eps
160603

Wireless Transmitter

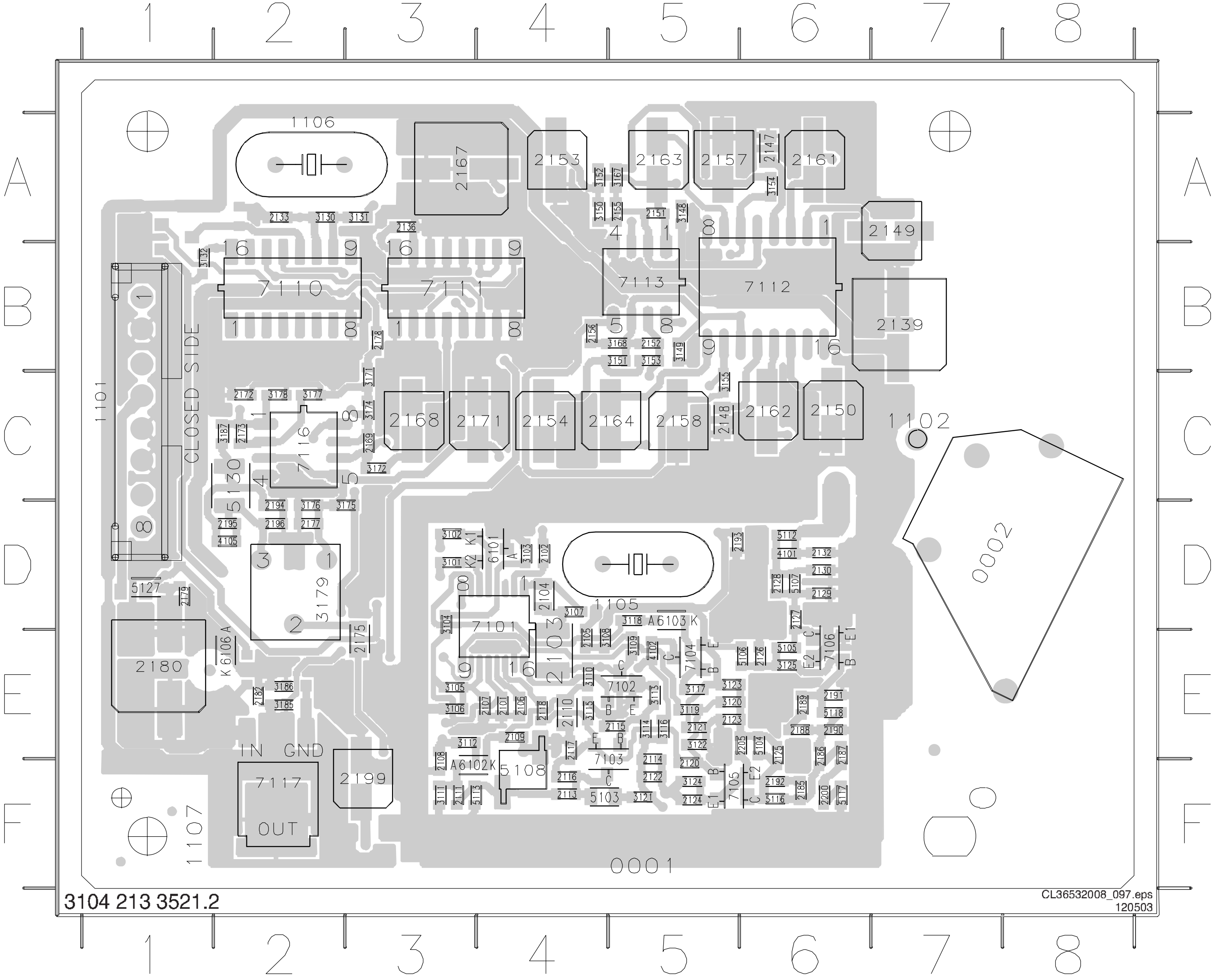

TRANSMITTER
SYNTHESIZER
7101 TSA5060ATS
TO TV CONNECTION
COMPANDER
7112 SA572D
STEREO CODER
7110 74HC4060
MODULATION LEVEL
ANT. BUTTERFLY
0002 AERIAL BRACKET
1102 RT-01T
7111-A 74HC4053D
7111-B 74HC4053D
7111-C 74HC4053D
7113-A NJM4565M
7113-B NJM4565M
7116-A NJM4565M
7116-B NJM4565M
7103 BFR92A
7105 BFG520
7106 BFG520
10 CHANGE
3104 213 3521.3

COMPNENT VALUES FOR ORIENTATION BASED ON 864MHz VERSION.

0001	D1
0002	B15
1101	E2
1102	A14
1105	C2
1106	I12
1107	D1
2101	C6
2102	C2
2103	B2
2104	B2
2105	B1
2106	C4
2107	D5
2108	B5
2109	C5
2110	C5
2111	B6
2113	B6
2114	A8
2115	D7
2116	C8
2117	D8
2118	D8
2120	C8
2121	A11
2122	A8
2123	C9
2124	D9
2125	C9
2126	B12
2127	B12
2128	B13
2129	C12
2130	C13
2131	B14
2132	C13
2133	H11
2134	G13
2135	E12
2136	F9
2137	F8
2139	I4
2140	I3
2141	H2
2142	H2
2143	G2
2144	H2
2145	G2
2146	H2
2147	J2
2148	J2
2149	I2
2150	J2
2151	H6
2152	J6
2153	H6
2154	K6
2155	H5
2156	J5
2157	I5
2158	J5
2159	J1
2160	J1
2161	J2
2162	J2
2163	I2
2164	I2
2165	I7
2166	J7
2167	K7
2168	I9
2169	K10
2170	J10
2171	I11
2172	K11
2173	J11
2174	J15
2175	I14
2176	I6
2177	I10
2178	K11
2179	F3
2180	F4
2181	E5
2182	F5
2183	G6
2184	F2
2185	C10
2186	C10
2187	C10
2188	C11
2189	C11
2190	C11
2191	C11
2192	C10
2193	A11
2194	J13
2195	J13
2196	J13
2197	D3
2198	D6
2199	B6
2200	D10
2201	A7
2202	E7
2203	F2
2204	F2
2205	C9
2206	B15
2207	C15
2208	B15
2210	C14
3101	C1
3102	C1
3103	C2
3104	C2
3105	D5
3106	D5
3107	B2
3108	B1
3109	B1
3110	B4
3111	C5
3112	B5
3113	D7
3114	C7
3115	D7
3116	A8
3117	A10
3118	B10
3119	C8
3120	C8
3121	A7
3122	D8
3123	B9
3124	D9
3125	B12
3127	A12
3130	H12
3131	G13
3132	G11
3140	G1
3141	H1
3142	H1
3143	H1
3144	G3
3145	H3
3146	G2
3147	H2
3148	H5
3149	K5
3150	G6
3151	K6
3152	G6
3153	K6
3154	I4
3155	J4
3156	J2
3157	J2
3158	J1
3159	K1
3160	H7
3161	J7
3164	J7
3165	K7
3166	I9
3167	I5
3168	J5
3169	I8
3171	J11
3172	J9
3173	K10
3174	J10
3175	I10
3176	I10
3177	J11
3178	J11
3179	J13
3180	E4
3181	E5
3182	F6
3183	G6
3185	F5
3186	G4
3187	J13
3188	I15
3189	G9
3190	I8
3191	J7
4101	B13
4102	A9
4104	B14
4105	I13
4106	E7
4107	A6
4108	C15
5101	C6
5103	B7
5104	C9
5105	B12
5106	A12
5107	B13
5108	C6
5109	C14
5112	B13
5113	C6
5116	C10
5117	D10
5118	C11
5120	B16
5121	C16
5125	E12
5126	E8
5127	F3
5128	B15
5129	C15
5130	J13
5131	B14
5132	A6
5133	E7
6101	D2
6102	B5
6103	B10
6105	E5
6106	F4
6110	B14
6111	C14
7101	B3
7102	B4
7103	C7
7104	A10
7105	C9
7106	B12
7110	E11
7111-A	F8
7111-B	G8
7111-C	H8
7112	I3
7113-A	I6
7113-B	J6
7116-A	J12
7116-B	J10
7117	F5
7118	E5
7119	F6
7120	K9
7121	K10
F110	C2
F111	C4
F112	B1
F113	A8
F114	B14
F115	C14
F116	F2
F117	E2
F118	E2
F119	E2
F120	F2
F121	F3
F122	F4
F123	E5
F124	F6
F125	E6
F126	F7
F130	G13
F131	F13
F140	G4
F141	H4
F142	H4
F143	J4
F144	J6
F145	H7
F146	I9
F147	J10
F148	I11
F149	J12
F150	I14
F151	E4

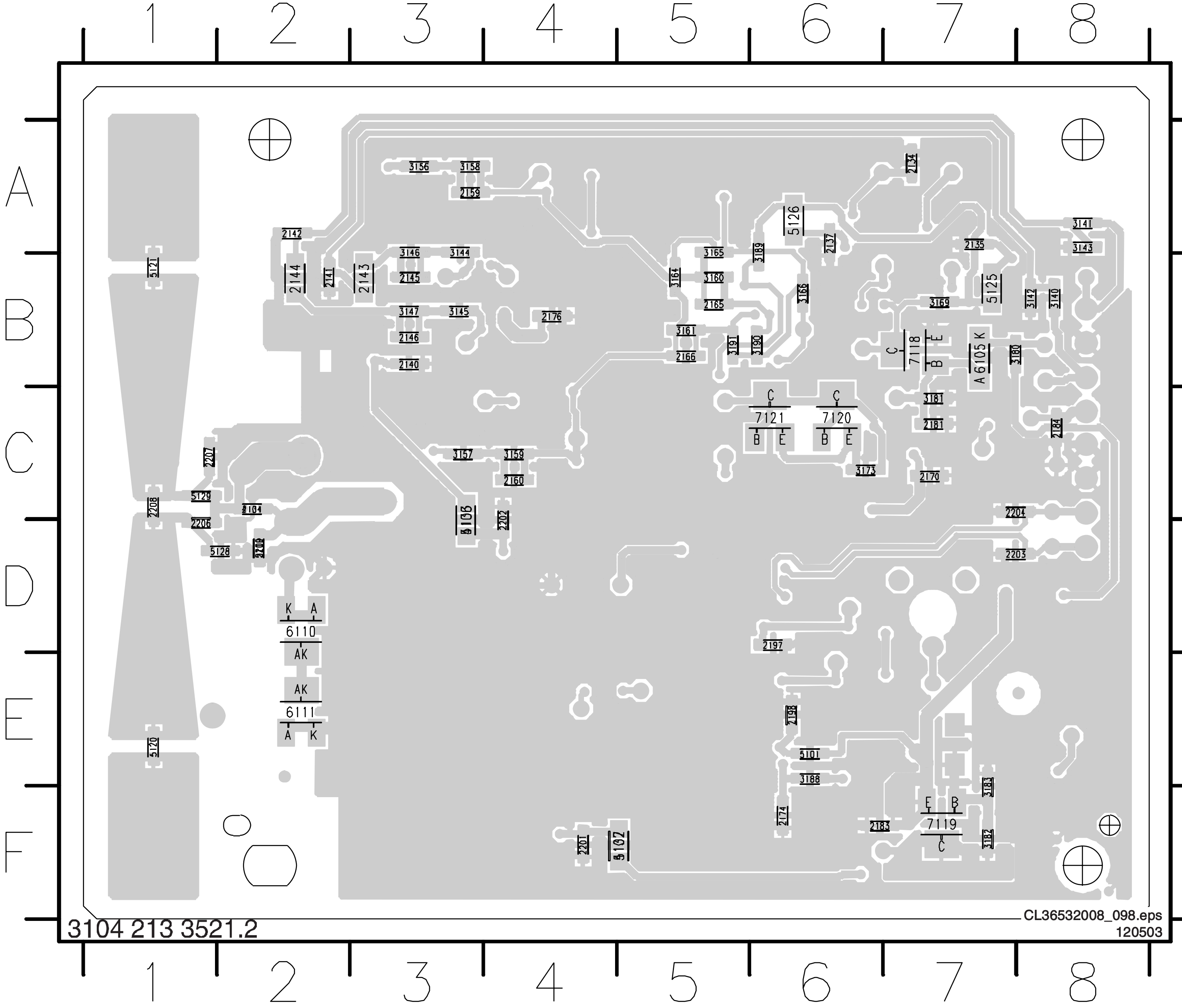
CL36532008_131.eps
120503

Layout Wireless Transmitter (Top Side)


1
2
3
4
5
6
7
8
A
B
C
D
E
F
1106
2167
2153
2163
2157
2147
2161
2149
7110
7111
7113
7112
2139
1101
CLOSED SIDE
7116
5130
2168
2171
2154
2164
2158
2148
2162
2150
1102
0002
3179
5127
2180
6106
7101
2103
1105
6101
6103
7102
7104
7106
7103
5103
5108
6102
7105
7117
IN
GND
OUT
2199
1107
0001
3104 213 3521.2
CL36532008_097.eps
120503

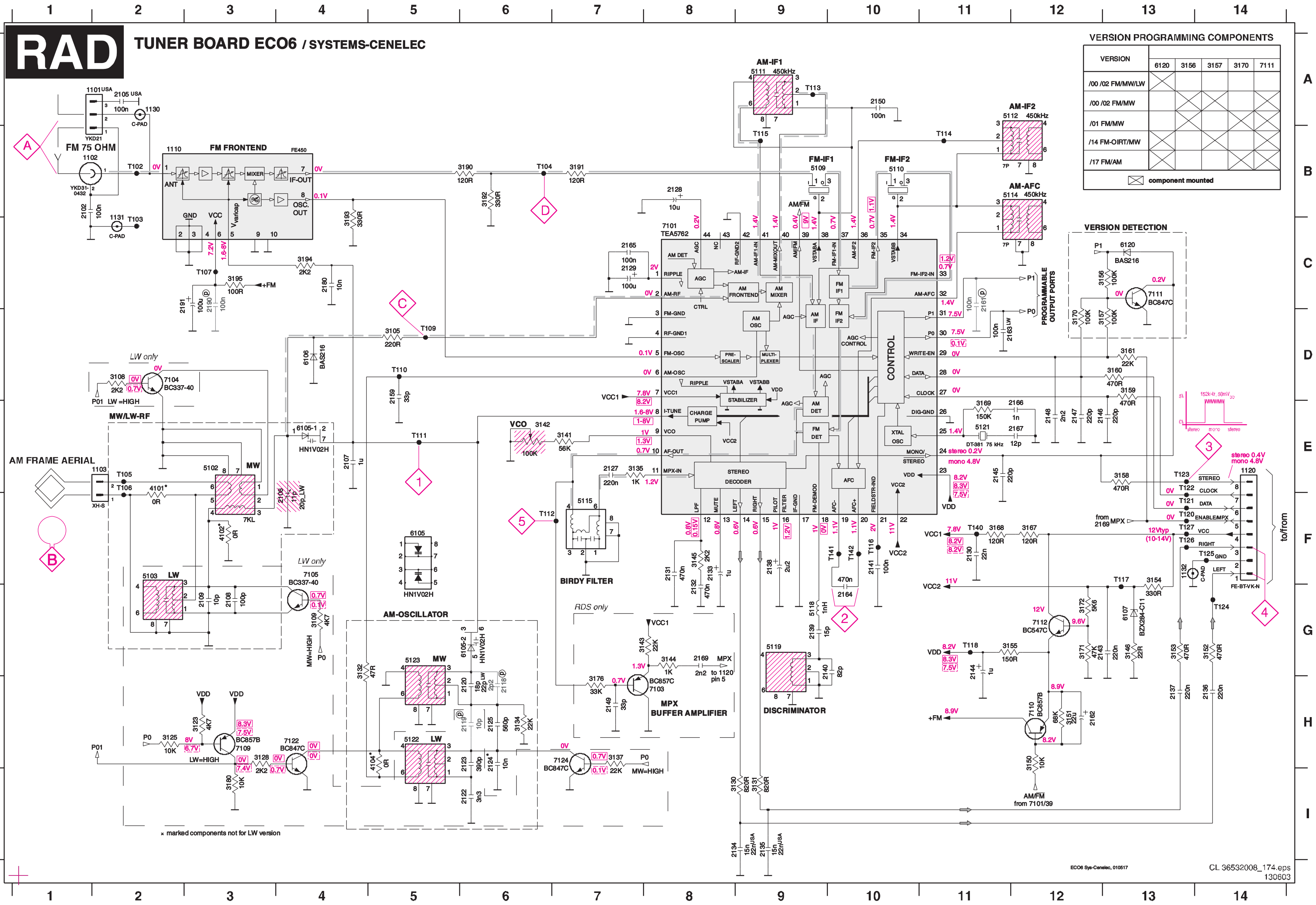
0001	E6	2172	C2	3155	C5
0002	D7	2173	C2	3167	A5
1101	C1	2175	E3	3168	B5
1102	C7	2177	D2	3171	C3
1105	D5	2178	B3	3172	C3
1106	A2	2179	D1	3174	C3
2101	E4	2180	E1	3175	D3
2102	D4	2182	E2	3176	D2
2103	E4	2185	E6	3177	C2
2104	D4	2186	E6	3178	C2
2105	E4	2187	E6	3179	D2
2106	E4	2188	E6	3185	E2
2107	E4	2189	E6	3186	E2
2108	F3	2190	E6	3187	C2
2109	E4	2191	E6	4101	D6
2110	E4	2192	F6	1402	E5
2111	F3	2193	D5	4105	D2
2113	F4	2194	D2	5103	F4
2114	F5	2195	D2	5104	E6
2115	E5	2196	D2	5105	E6
2116	F4	2199	F3	5106	E6
2117	E4	2200	F6	5107	D6
2118	E4	2205	E6	5108	F4
2120	F5	3101	D3	5112	D6
2121	E5	3102	D3	5113	F3
2122	F5	3103	D4	5116	F6
2123	E5	3104	D3	5117	F6
2124	E5	3105	E3	5118	E6
2125	E6	3106	E3	5127	D1
2126	E6	3107	D4	5130	C2
2127	D6	3108	E4	6101	D4
2128	D6	3109	E5	6102	F3
2129	D6	3110	E4	6103	D5
2130	D6	3111	F3	6106	E2
2132	D6	3112	E3	7101	D4
2133	A2	3113	E5	7102	E5
2136	A3	3114	E5	7103	F5
2139	B7	3115	E4	7104	E5
2147	A6	3116	E5	7105	F5
2148	C5	3117	E5	7106	E6
2149	A7	3118	D5	7110	B2
2150	C6	3119	E5	7111	B3
2151	A5	3120	E5	7112	B6
2152	B5	3121	F5	7113	B5
2153	A4	3122	E5	7116	C2
2154	C4	3123	E5	7117	F2
2155	A5	3124	F5		
2156	B4	3125	E6		
2157	A5	3130	A2		
2158	C5	3131	A3		
2161	A6	3132	B1		
2162	C6	3148	A5		
2163	A5	3149	B5		
2164	C5	3150	A4		
2167	A3	3151	B5		
2168	C3	3152	A4		
2169	C3	3153	B5		
2171	C4	3154	A6		

Layout Wireless Transmitter Board (Bottom Side)


1
2
3
4
5
6
7
8
A
B
C
D
E
F
3156
3158
2159
2134
5126
3141
3143
2142
2144
2141
2143
3146
3144
2145
3147
3145
2146
2176
2140
3165
3189
2137
3164
3160
2165
3166
3161
2166
3191
3190
2135
5125
3142
3140
3169
C
7118
B
E
K
A 6105
3180
3181
2181
C
7121
B E
C
7120
B E
3173
2170
2184
3157
3159
2160
2207
5121
5129
2208
4104
2206
5128
2210
4106
2202
2204
2203
K A
6110
AK
AK
6111
A K
5120
2197
2198
5101
3188
2174
3183
E B
7119
C
2183
3182
2201
4107
3104 213 3521.2
CL36532008_098.eps
120503

2131	C2
2134	A7
2135	A7
2137	A6
2140	B3
2141	B2
2142	A2
2143	B3
2144	B2
2145	B3
2146	B3
2159	A3
2160	C4
2165	B5
2166	B5
2169	C7
2174	F6
2176	B4
2181	C7
2183	F6
2184	C8
2197	D6
2198	E6
2201	F4
2202	D4
2203	D7
2204	C7
2206	D1
2207	C1
2208	C1
2210	D2
3140	B8
3141	A8
3142	B8
3143	A8
3144	A3
3145	B3
3146	A3
3147	B3
3156	A3
3157	C3
3158	A3
3159	C4
3160	B5
3161	B5
3164	B5
3165	A5
3166	B6
3167	B7
3169	C6
3173	B7
3180	B8
3181	C7
3182	F7
3183	F7
3188	E6
3189	A6
3190	B6
3191	B5
4104	C2
4106	D3
4107	F5
5101	E6
5109	D2
5120	E1
5121	B1
5125	B7
5126	A6
5128	D2
5129	C1
5132	F5
5133	D3
6105	B7
6110	D2
6111	E2
7118	B7
7119	F7
7120	C6
7121	C6

Radio Module ECO6 3 Band Cenelec


RAD
TUNER BOARD ECO6 / SYSTEMS-CENELEC
FM 75 OHM
FM FRONTEND
AM FRAME AERIAL
MW/LW-RF
LW only
AM-OSCILLATOR
AM-IF1
AM-IF2
AM-AFC
FM-IF1
FM-IF2
7101 TEA5762
CONTROL
STEREO DECODER
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
DISCRIMINATOR
VERSION DETECTION
PROGRAMMABLE OUTPUT PORTS
to/from
FE-BT-VK-N
× marked components not for LW version
ECO6 Sys-Cenelec, 010517
CL 36532008_174.eps
130603

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	C2
1132	F13
2102	B1
2105	A2
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2180	C4
2190	C3
2191	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3130	I9
3131	I9
3132	G4
3134	H6
3135	E7
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5118	G9
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

LEGEND

* ... only assembled in FM/AM-version
ⓟ...for provision only
USA ... for USA version only
LW ... for LW version only

SMD jumper
41xx
0R

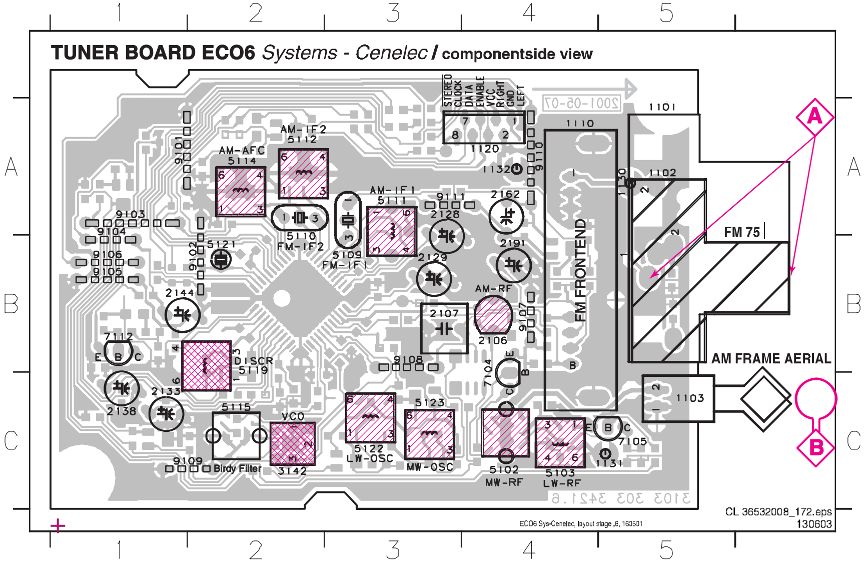
Ⓥ EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path
FM
AM
MPX (Audio Frequency)
⇨ AF - left/right

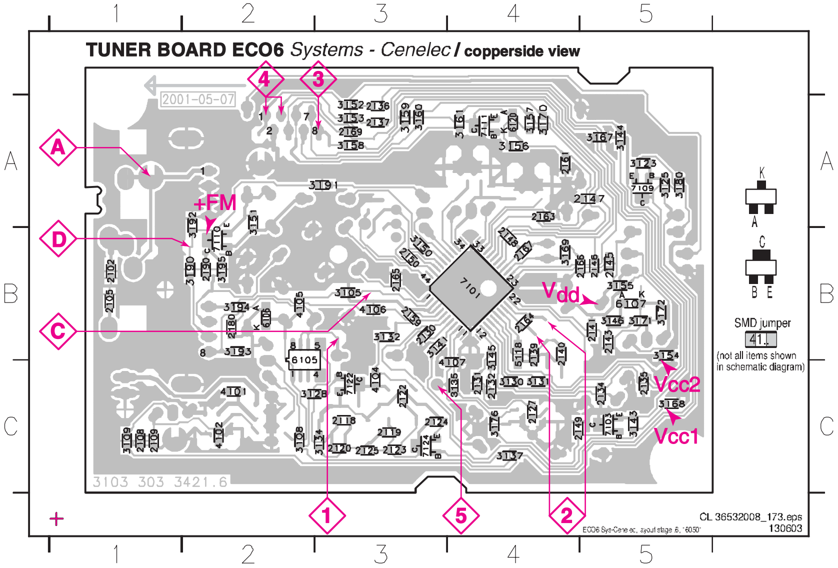
Layout Radio Module ECO6 3 Band Cenelec (Top Side)

1101	B5
1102	B5
1103	C5
1110	B4
1120	A4
1130	A5
1131	C5
1132	A4
2106	B4
2107	B3
2128	A3
2129	B3
2133	C1
2138	B1
2144	B1
2162	A4
2191	B4
3142	C2
5102	C4
5103	C4
5109	B3
5110	A2
5111	A3
5112	A2
5114	A2
5115	C2
5119	B2
5121	B2
5122	C3
5123	C3
7104	C4
7105	C5
7112	B1
9101	A2
9102	B2
9103	A1
9104	B1
9105	B1
9106	B1
9107	B4
9108	B3
9109	C2
9110	A4
9111	A3

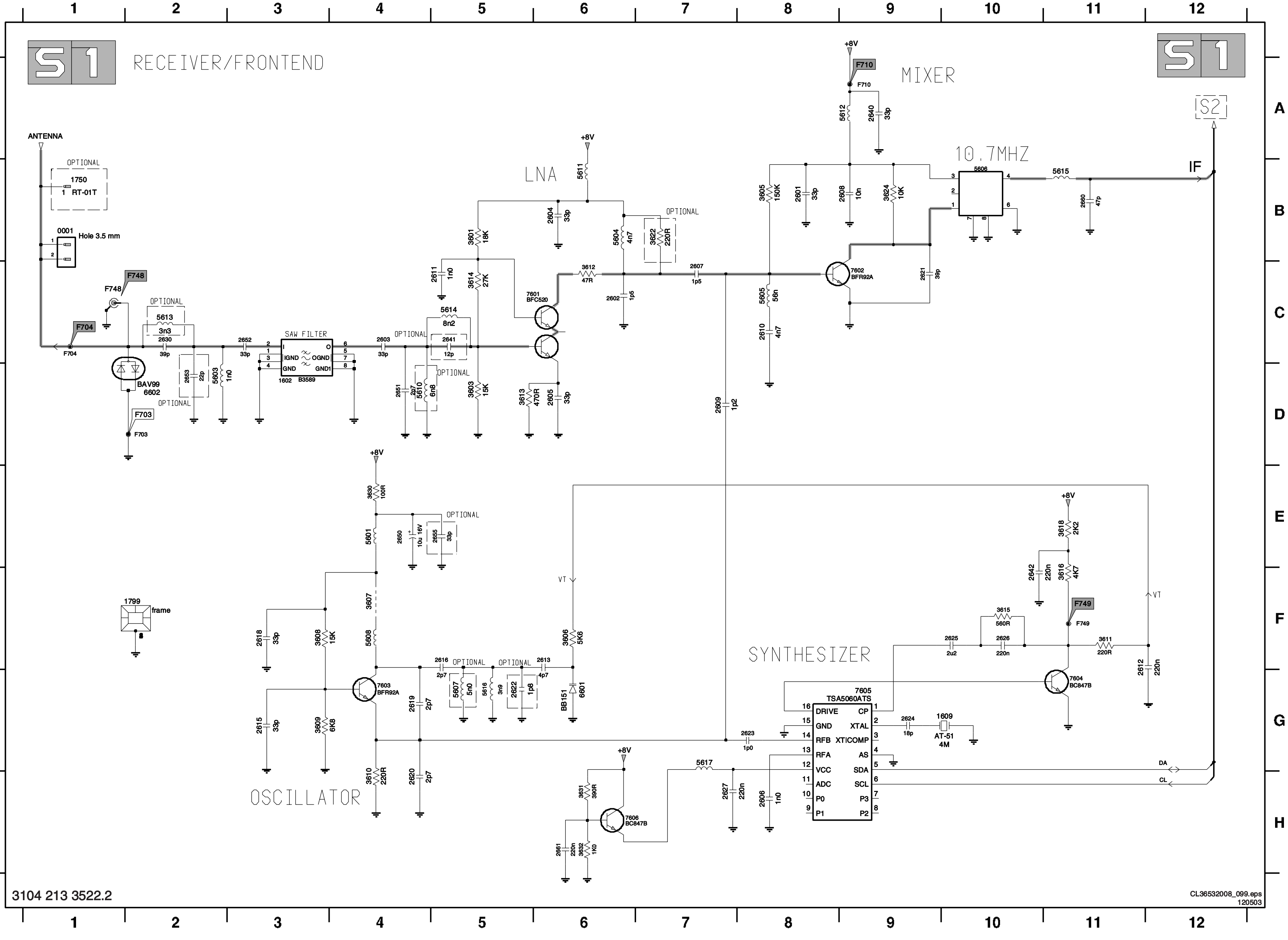

1
2
3
4
5
A
B
C
TUNER BOARD ECO6 Systems - Cenelec / componentside view
2001-05-07
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
1110
1120
1132
9110
1101
1102
1130
FM 75
FM FRONTEND
AM-IF2
5112
AM-AFC
5114
AM-IF1
5111
5110
FM-IF2
5109
FM-IF1
9111
2128
2162
2191
2129
AM-RF
2107
2106
9107
9108
7104
9101
9102
9103
9104
9106
9105
5121
2144
7112
E B C
2133
2138
DISCR
5119
5115
VCO
9109
Birdy Filter
3142
5122
LW-OSC
5123
MW-OSC
5102
MW-RF
5103
LW-RF
7105
1131
1103
AM FRAME AERIAL
A
B
3103 303 3421.6
CL 36532008_172.eps
130603
ECO6 Sys-Cenelec, layout stage .6, 160501

Layout Radio Module ECO6 3 Band Cenelec (Bottom Side)

2102	B1
2105	B1
2108	C1
2109	C1
2118	C3
2119	C3
2120	C3
2122	C3
2123	C3
2124	C3
2125	C3
2127	C4
2130	B3
2131	C4
2132	C4
2134	C5
2135	C5
2136	A3
2137	A3
2139	B4
2140	B4
2141	B5
2143	B5
2145	B5
2146	B5
2147	A5
2148	B4
2149	C4
2150	B3
2159	B3
2161	A4
2163	A4
2164	B4
2165	B3
2166	B5
2167	B4
2169	A3
2180	B2
2190	B2
3105	B3
3108	C2
3109	C1
3123	A5
3125	A5
3128	C2
3130	C4
3131	C4
3132	B3
3134	C3
3135	C4
3137	C4
3141	B3
3143	C5
3144	A5
3145	C4
3146	B5
3150	B3
3151	A2
3152	A3
3153	A3
3154	B5
3155	B5
3156	A4
3157	A4
3158	A3
3159	A3
3160	A3
3161	A4
3167	A5
3168	C5
3169	B4
3170	A4
3171	B5
3172	B5
3176	C4
3180	A5
3190	B2
3191	A3
3192	A2
3193	B2
3194	B2
3195	B2
4101	C2
4102	C2
4104	C3
4105	B2
4106	B3
4107	C4
5118	C4
6105	B2
6106	B2
6107	B5
6120	A4
7101	B4
7103	C5
7109	A5
7110	B2
7111	A4
7122	C3
7124	C3

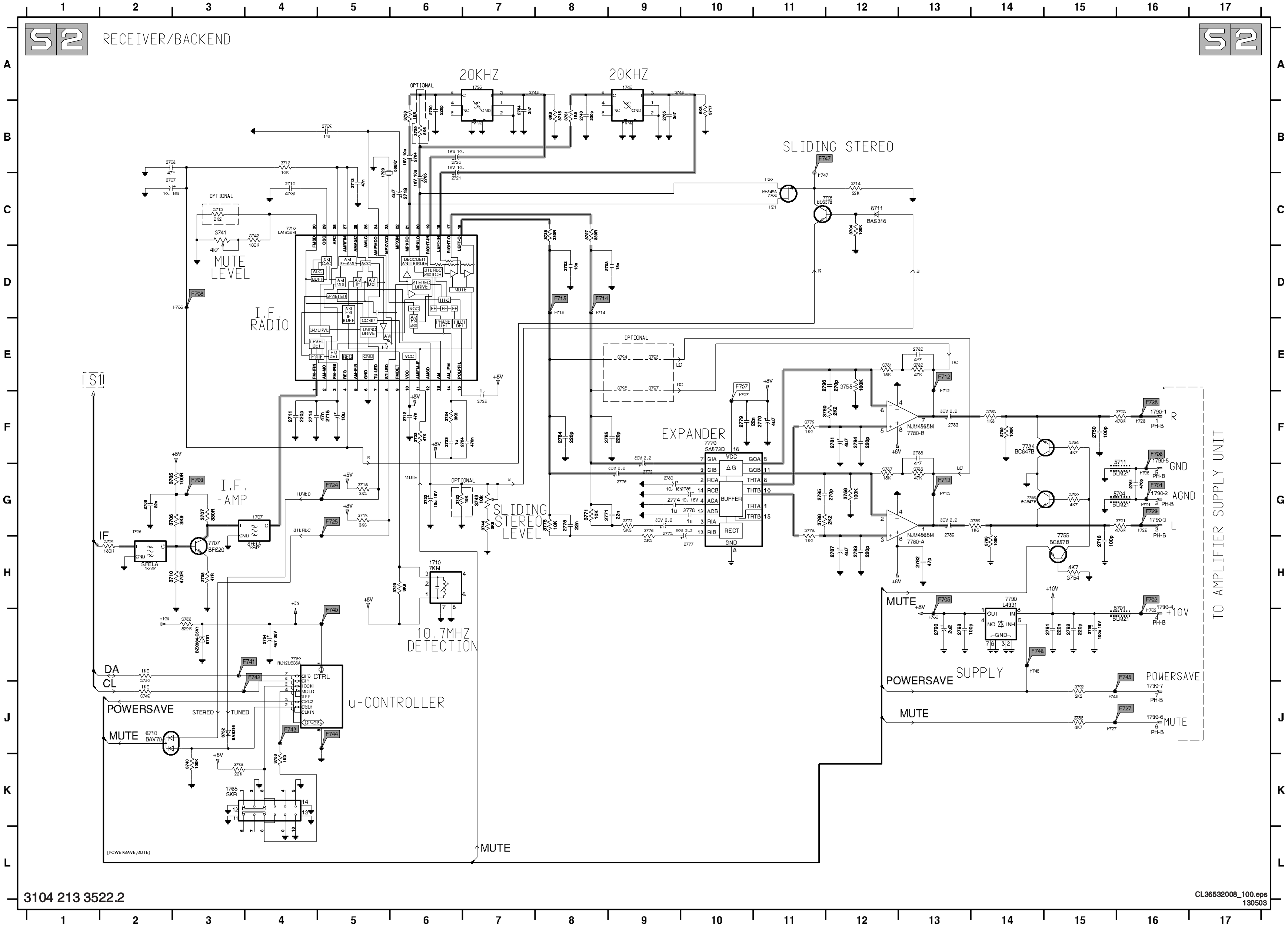

1
2
3
4
5
A
B
C
TUNER BOARD ECO6 Systems - Cenelec / copperside view
2001-05-07
4
3
A
+FM
D
C
Vdd
Vcc2
Vcc1
1
5
2
7101
6105
6107
6120
7110
7103
7124
K
A
C
B E
SMD jumper
41.
(not all items shown in schematic diagram)
3103 303 3421.6
CL 36532008_173.eps
130603
ECO6 Sys-Cenelec, layout stage .6, 160501

Wireless Receiver/Frontend


S1
RECEIVER/FRONTEND
S1
S2
MIXER
LNA
10.7MHZ
IF
SAW FILTER
SYNTHESIZER
OSCILLATOR
ANTENNA
OPTIONAL
1750
RT-01T
0001
Hole 3.5 mm
F748
F704
F703
F710
F749
BAV99
6602
5613
3n3
2630
39p
2652
33p
1602
B3589
IGND
OGND
GND
GND1
2603
33p
2641
12p
5614
8n2
5610
6n8
2653
22p
5603
1n0
2651
2p7
3601
18K
3614
27K
3603
15K
2611
1n0
7601
BFC520
3613
470R
2605
33p
+8V
5611
2604
33p
5604
4n7
3622
220R
3612
47R
2602
1p5
2607
1p5
2609
1p2
5612
2640
33p
3605
150K
2601
33p
2608
10n
3624
10K
5605
56n
2610
4n7
7602
BFR92A
2621
39p
5606
5615
2660
47p
3630
100R
5601
2650
10u 16V
2655
33p
3607
5608
2618
33p
3608
15K
7603
BFR92A
2615
33p
3609
6K8
3610
220R
2616
2p7
5607
5n0
5616
3n9
2622
1p8
2613
4p7
2619
2p7
2620
2p7
VT
3606
5K6
BB151
6601
1799
frame
3631
390R
7606
BC847B
2661
220n
3632
1K0
5617
2627
220n
2606
1n0
2623
1p0
7605
TSA5060ATS
DRIVE
CP
GND
XTAL
RFB
XTICOMP
RFA
AS
VCC
SDA
ADC
SCL
P0
P3
P1
P2
2624
18p
1609
AT-51
4M
3618
2K2
2642
220n
3616
4K7
3615
560R
2625
2u2
2626
220n
3611
220R
7604
BC847B
2612
220n
DA
CL
3104 213 3522.2
CL36532008_099.eps
120503
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H

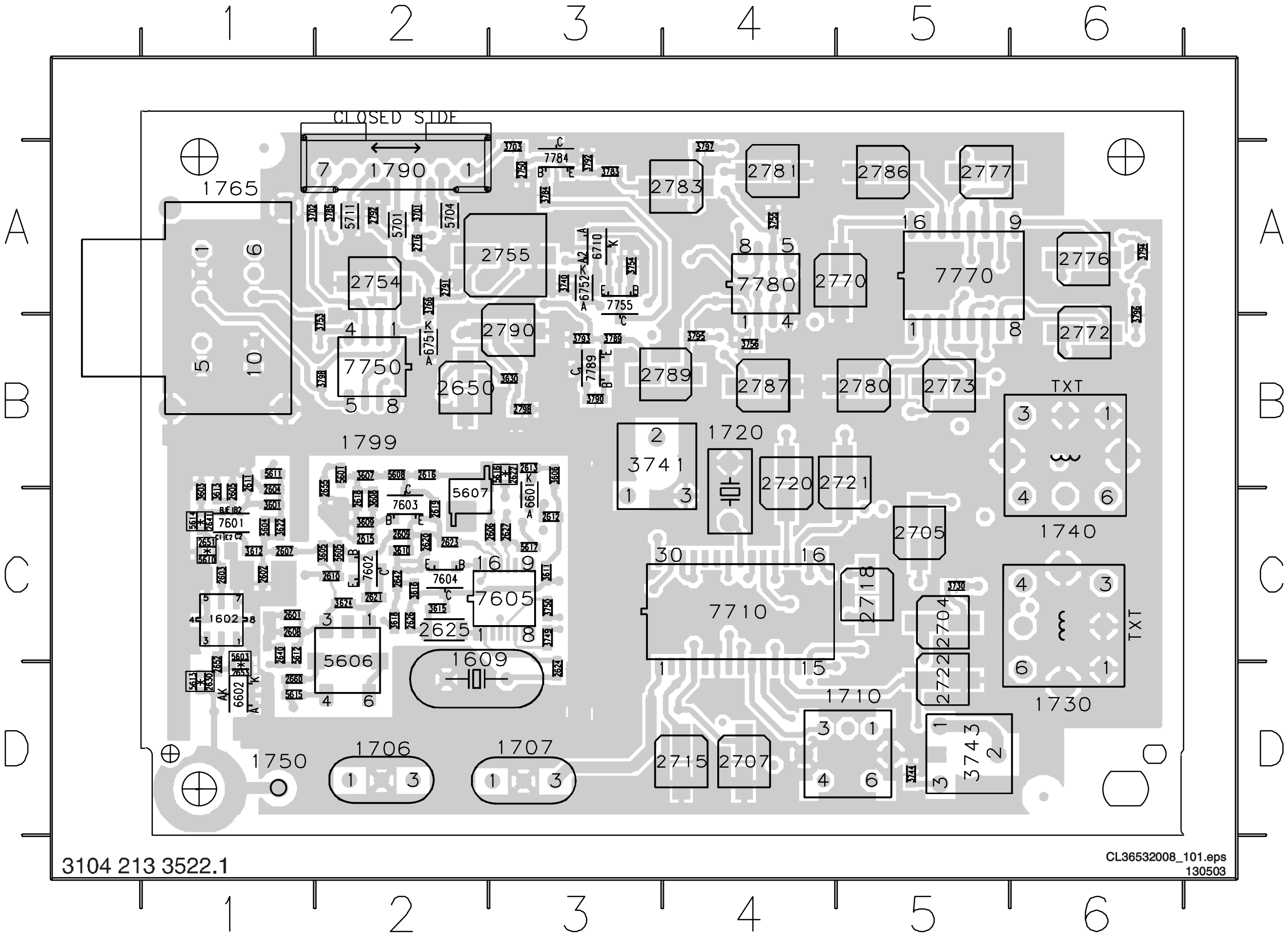
0001	B1
1602	D3
1609	G10
1750	B1
1799	F1
2601	B8
2602	C6
2603	C4
2604	B6
2605	D6
2606	H8
2607	C7
2608	B9
2609	D7
2610	C8
2611	C5
2612	F11
2613	F6
2615	G3
2616	F5
2618	F3
2619	G4
2620	H4
2621	C9
2622	G5
2623	G8
2624	G9
2625	F10
2626	F10
2627	H7
2630	C2
2640	A9
2641	C5
2642	F10
2650	E4
2651	D4
2652	C3
2653	D2
2655	E5
2660	B11
2661	H6
3601	B5
3603	D5
3605	B8
3606	F6
3607	F4
3608	F3
3609	G3
3610	H4
3611	F11
3612	C6
3613	D5
3614	C5
3615	F10
3616	F11
3618	E11
3622	B7
3624	B9
3630	E4
3631	H6
3632	H6
5601	E4
5603	D2
5604	B6
5605	C8
5606	B10
5607	G5
5608	F4
5610	D4
5611	B6
5612	A9
5613	C2
5614	C5
5615	B11
5616	G5
5617	G7
6601	G6
6602	D2
7601	C5
7602	C9
7603	G4
7604	G11
7605	G9
7606	H7
F703	D2
F704	C1
F710	A9
F748	C1
F749	F11

Wireless Receiver/Backend


S2
RECEIVER/BACKEND
20KHZ
20KHZ
OPTIONAL
SLIDING STEREO
MUTE LEVEL
I.F. RADIO
I.F. -AMP
IF
S1
EXPANDER
SA572D
NJM4565M
BC847B
BC857B
BAS316
BFS20
SFELA 10M7
10.7MHZ DETECTION
SLIDING STEREO LEVEL
u-CONTROLLER
PIC12C508A
L4931
BLM21
DA
CL
POWERSAVE
MUTE
STEREO
TUNED
BAV70
BZX384-C6V1
1765 SKR
SUPPLY
GND
AGND
R
L
+10V
+8V
+5V
PH-B
TO AMPLIFIER SUPPLY UNIT
(POWERSAVE,MUTE)
3104 213 3522.2
CL36532008_100.eps
130503

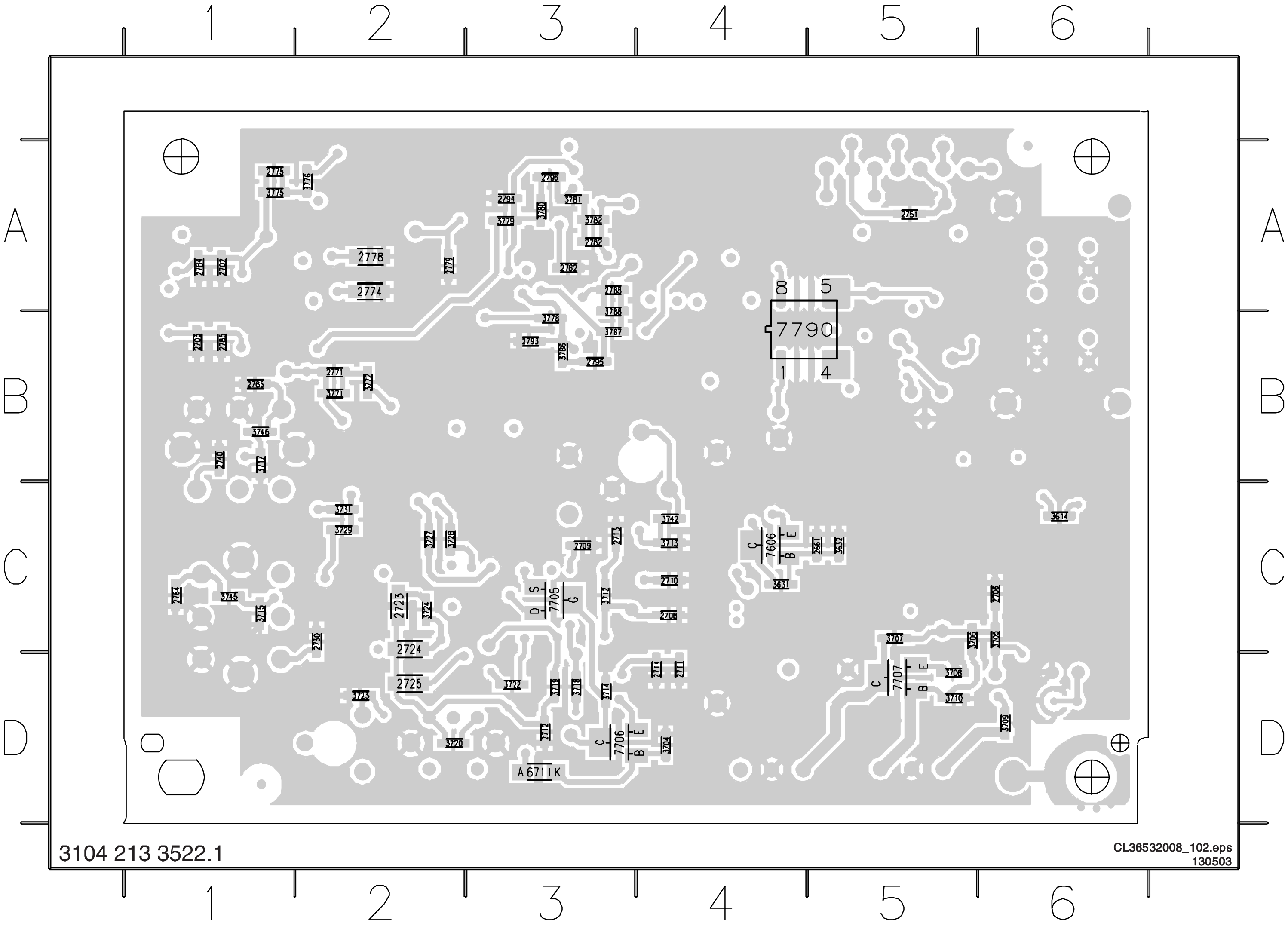
1706	G2
1707	G4
1710	H6
1720	B5
1730	A7
1740	A9
1765	K3
1790-1	F16
1790-2	G16
1790-3	G16
1790-4	I16
1790-5	F16
1790-6	J16
1790-7	J16
2702	D8
2703	D9
2704	B6
2705	C6
2706	G2
2707	C2
2708	B2
2709	B5
2710	C4
2711	F4
2712	F6
2713	C5
2714	F4
2715	F5
2716	H15
2718	C6
2720	B6
2721	C6
2722	G6
2723	F6
2724	F7
2725	F7
2730	B6
2740	B8
2750	F15
2751	G16
2754	I4
2755	I15
2762	H13
2770	F11
2771	G9
2772	G9
2773	G9
2774	G9
2775	G8
2776	G9
2777	H10
2778	G10
2779	F10
2780	G9
2781	F12
2782	E13
2783	F13
2784	F8
2785	F9
2786	G10
2787	H12
2788	F13
2789	G13
2790	I13
2791	I15
2792	I15
2793	H12
2794	F12
2795	G11
2796	E12
2798	I13
3701	G16
3702	J15
3703	F16
3704	C12
3705	G3
3706	G3
3707	G3
3708	H3
3709	H2
3710	H3
3712	B4
3713	C3
3714	C12
3715	B8
3717	B10
3718	G5
3719	G5
3720	H6
3722	F6
3723	G6
3724	F6
3727	C8
3728	C8
3729	B6
3730	B6
3731	B8
3740	K3
3741	C3
3742	C4
3743	G7
3744	G7
3745	A7
3746	A9
3749	J2
3750	I2
3753	K4
3754	H15
3755	E12
3756	G12
3766	I3
3771	G8
3772	G9
3775	G8
3776	G9
3778	G11
3779	F11
3780	F12
3781	E12
3782	E13
3783	F14
3784	F15
3785	J15
3786	G11
3787	G12
3788	G13
3789	G14
3790	G15
3792	F14
3793	H14
3794	E9
3795	E9
3796	E9
3797	E9
3798	K3
5701	H16
5704	G16
5711	F16
6710	J2
6711	C12
6751	I3
6752	J3
7705	C11
7706	C12
7707	H3
7710	C4
7750	I4
7755	H15
7770	F10
7780-A	H13
7780-B	F13
7784	F14
7789	G14
7790	H14
F701	G16
F702	I16
F705	I13
F706	G16
F707	F10
F708	D3
F709	G3
F712	F13
F713	G13
F714	D8
F715	D8
F724	G5
F725	G5
F727	J15
F728	F16
F729	G16
F740	I5
F741	I4
F742	J4
F743	J4
F744	J5
F745	J15
F746	I14
F747	C11

Layout Wireless Receiver (Top Side)


1
2
3
4
5
6
A
B
C
D
CLOSED SIDE
1790
1765
2783
2781
2786
2777
2755
2754
2790
7750
2650
7780
2770
7770
2776
2772
2789
2787
2780
2773
TXT
1740
1799
3741
1720
2720
2721
2705
7601
7603
5607
7604
7605
7602
2625
1602
5606
1609
7710
2718
2704
2722
1730
TXT
1710
3743
1750
1706
1707
2715
2707
7784
7755
7789
6710
6751
6752
6601
6602
3104 213 3522.1
CL36532008_101.eps
130503

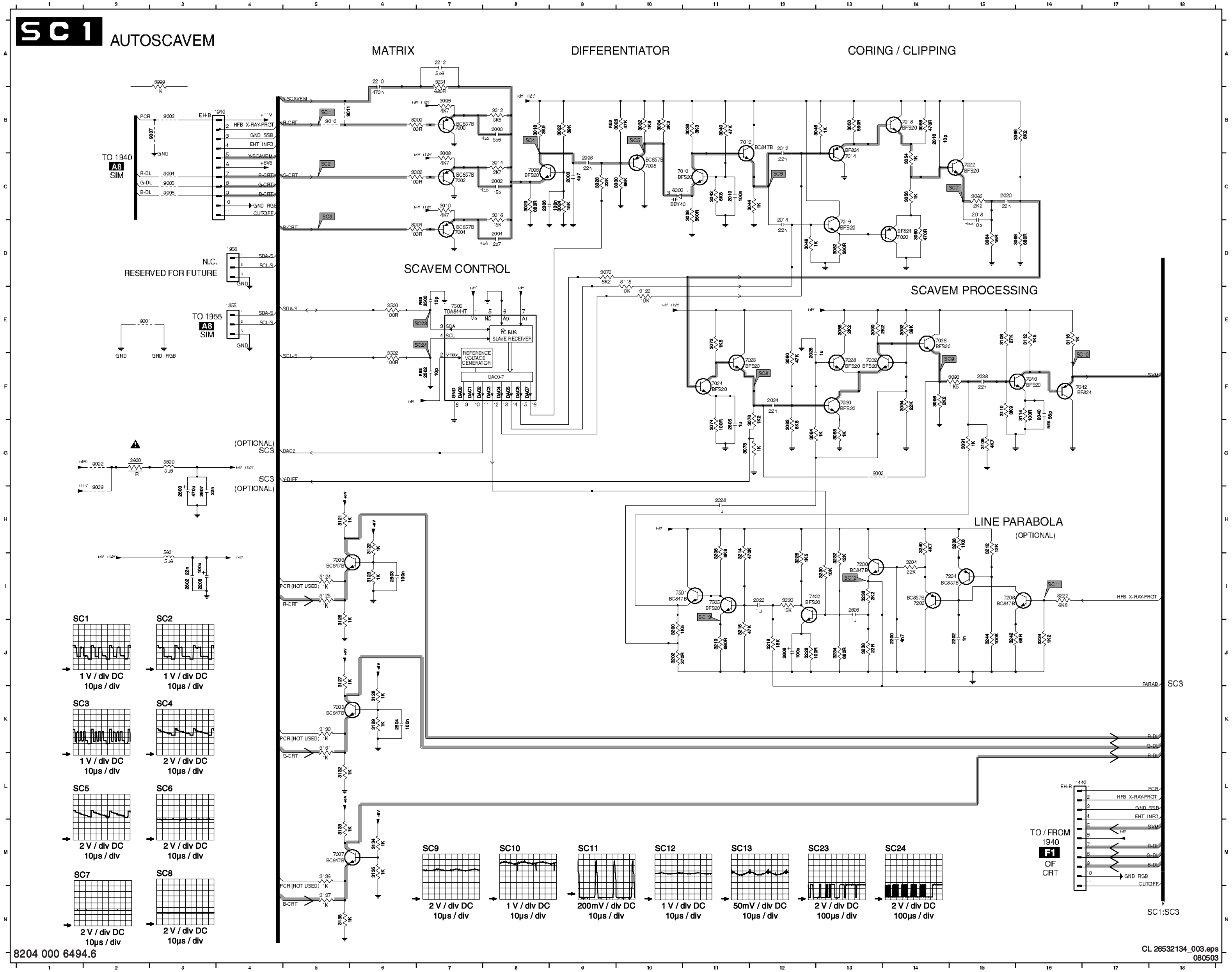
1602	C1	2755	A3	3797	A4
1609	D2	2770	A5	3798	B2
1706	D2	2772	B6	5601	B2
1707	D3	2773	B5	5603	D1
1710	D5	2776	A6	5604	C1
1720	C4	2777	A5	5605	C2
1730	C6	2780	B5	5606	C2
1740	B6	2781	A4	5607	C2
1750	D1	2783	A4	5608	B2
1765	A1	2786	A5	5610	C1
1790	A2	2787	B4	5611	B1
1799	C1	2789	B4	5612	C1
2601	C1	2790	B3	5613	D1
2602	C1	2791	A2	5614	C1
2603	C1	2792	A2	5615	D1
2604	C1	2798	B3	5616	B3
2605	C1	3601	C1	5617	C3
2606	C3	3603	C1	5701	A2
2607	C1	3605	C2	5704	A2
2608	C1	3606	B3	5711	A2
2609	C2	3607	B2	6601	C3
2610	C2	3608	C2	6602	D1
2611	B1	3609	C2	6710	A3
2612	C3	3610	C2	6751	B2
2613	B3	3611	C3	6752	A3
2615	C2	3612	C1	7601	C1
2616	D2	3613	C1	7602	C2
2618	C2	3615	C2	7603	C2
2619	C2	3616	C2	7604	C2
2620	C2	3618	C2	7605	C3
2621	C2	3622	C1	7710	C4
2622	B3	3624	C1	7750	B2
2623	C2	3630	B3	7755	A3
2624	D3	3701	A2	7770	A5
2625	C2	3702	A1	7780	A4
2626	C2	3703	A3	7784	A3
2627	C3	3730	C5	7789	B3
2630	D1	3740	A3		
2640	C1	3741	B3		
2641	C1	3743	D5		
2642	C2	3744	D5		
2650	B2	3749	C3		
2651	C1	3750	C3		
2652	D1	3753	B2		
2653	D1	3754	A3		
2655	C2	3755	A4		
2660	D1	3756	B4		
2704	C5	3766	A2		
2705	C5	3783	A3		
2707	D4	3784	A3		
2715	D4	3785	A2		
2716	A2	3789	B3		
2718	C5	3790	B3		
2720	B4	3792	A3		
2721	B5	3793	B3		
2722	D5	3794	A6		
2750	A3	3795	B4		
2754	A2	3796	B6		

Layout Wireless Receiver Board (Bottom Side)


1
2
3
4
5
6
A
B
C
D
2778
2774
7790
8
5
1
4
7606
C
B
E
7705
D
S
G
2723
2724
2725
7707
7706
A 6711 K
3104 213 3522.1
CL36532008_102.eps
130503

2661	C5
2702	A1
2703	B1
2706	C6
2708	C4
2709	C3
2710	C4
2711	D4
2712	D3
2713	C3
2714	D4
2723	C2
2724	C2
2725	D2
2730	C2
2740	B1
2751	A5
2762	A3
2771	C1
2774	B1
2775	B2
2778	A2
2779	A2
2782	A3
2784	A1
2785	B1
2788	A3
2793	B3
2794	A3
2795	B3
2796	A3
3614	C6
3631	C4
3632	C5
3704	D4
3705	C6
3706	C5
3707	C5
3708	D5
3709	D6
3710	D5
3712	C3
3713	C4
3714	D3
3715	C1
3717	B1
3718	D3
3719	D3
3720	D2
3722	D3
3723	D2
3724	C2
3727	C2
3728	C2
3729	C2
3731	C2
3742	C4
3745	C1
3746	B1
3771	B2
3772	B2
3775	A1
3776	A2
3778	B3
3779	A3
3780	A3
3781	A3
3782	A3
3786	B3
3787	B3
3788	B3
6711	D3
7606	C4
7705	C3
7706	D3
7707	D5
7790	B4
F701	A5
F702	A5
F703	D6
F704	D6
F705	B4
F706	A5
F707	A2
F708	C3
F709	C5
F710	D6
F712	A3
F713	A3
F714	B1
F715	A1
F724	D3
F725	C3
F727	A5
F728	A5
F729	A5
F740	B5
F741	B5
F742	B5
F743	B5
F744	B5
F745	A6
F746	A5
F747	D3
F748	D6
F749	C4

Auto SCAVEM Panel

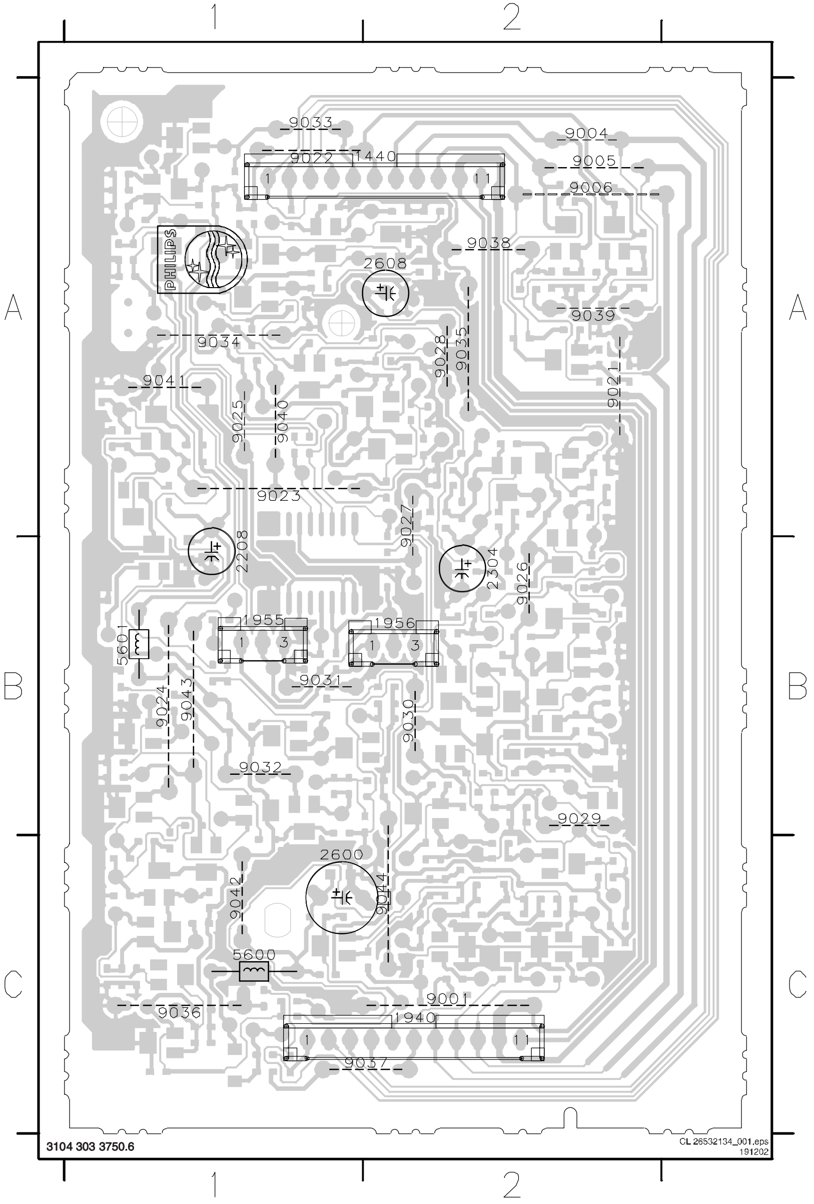

SC1
AUTOSCAVEM
MATRIX
DIFFERENTIATOR
CORING / CLIPPING
SCAVEM CONTROL
SCAVEM PROCESSING
LINE PARABOLA
(OPTIONAL)
TO 1940
A8
SIM
N.C.
RESERVED FOR FUTURE
TO 1955
A8
SIM
TDA8444T
I²C BUS SLAVE RECEIVER
REFERENCE VOLTAGE GENERATOR
DAC0-7
(OPTIONAL) SC3
DAC2
SC3 (OPTIONAL)
Y-DIFF
PCR (NOT USED)
R-CRT
G-CRT
B-CRT
HFB X-RAY-PROT
GND SSB
EHT INFO
Y-SCAVEM
CUTOFF
SDA-S
SCL-S
SVM
PARAB
SC3
R-DL
G-DL
B-DL
TO / FROM 1940
F1
OF CRT
SC1:SC3
SC1
1 V / div DC
10µs / div
SC2
1 V / div DC
10µs / div
SC3
1 V / div DC
10µs / div
SC4
2 V / div DC
10µs / div
SC5
2 V / div DC
10µs / div
SC6
2 V / div DC
10µs / div
SC7
2 V / div DC
10µs / div
SC8
2 V / div DC
10µs / div
SC9
2 V / div DC
10µs / div
SC10
1 V / div DC
10µs / div
SC11
200mV / div DC
10µs / div
SC12
1 V / div DC
10µs / div
SC13
50mV / div DC
10µs / div
SC23
2 V / div DC
100µs / div
SC24
2 V / div DC
100µs / div

8204 000 6494.6

CL 26532134_003.eps
080503

1440	L17
1840	B4
1855	E4
1856	D4
2000	B8
2002	C8
2003	C8
2004	D8
2006	C8
2008	C8
2010	C11
2012	B12
2014	D12
2016	B14
2018	C15
2020	C15
2022	I12
2024	F12
2026	F12
2028	H11
2038	F15
2040	F16
2200	J14
2202	J15
2208	I3
2210	A6
2212	A7
2500	E7
2502	F7
2503	I6
2504	K6
2600	H3
2602	I3
2605	G11
2606	I13
2607	H3
2608	J12
3000	B7
3002	C7
3004	D7
3006	B7
3008	C7
3010	C7
3012	B8
3014	C8
3016	C8
3018	B8
3020	C8
3022	B9
3024	C9
3026	B10
3028	C9
3030	C10
3032	B10
3034	B10
3036	B11
3038	C11
3040	B11
3042	C11
3044	C12
3046	B13
3048	D12
3050	B13
3052	D13
3054	C14
3056	C14
3058	B14
3060	D14
3062	C15
3064	D15
3066	B16
3068	D16
3070	D9
3072	E11
3074	G11
3076	G12
3078	G12
3080	F12
3082	G12
3084	G12
3086	E13
3088	G13
3090	E13
3091	G15
3092	E14
3093	F15
3094	F14
3096	F14
3106	G15
3108	E15
3110	F15
3112	E16
3114	F16
3116	E16
3118	D10
3120	E10
3121	H5
3122	H6
3123	I6
3124	I5
3125	I5
3126	J5
3127	J5
3128	K6
3129	K6
3130	K5
3131	K5
3132	L5
3133	M5
3134	M6
3135	M6
3136	M5
3137	N5
3138	N5
3200	J10
3202	J10
3204	I14
3206	I11
3208	H15
3210	J11
3212	H15
3214	I11
3216	J11
3218	J12
3220	I12
3222	I16
3224	J16
3226	I12
3228	J12
3230	I13
3232	I13
3234	J13
3236	I13
3238	J13
3240	H14
3242	J15
3244	J15
3254	A7
3500	E6
3502	F6
3600	G2
3999	A3
5600	G3
5601	I3
6000	C10
7000	B7
7002	C7
7003	I5
7004	D7
7005	K5
7006	C8
7007	M5
7008	C10
7010	C10
7012	B11
7014	C13
7016	D13
7018	B14
7020	D14
7022	C15
7024	F11
7026	F11
7028	F13
7030	F13
7032	F13
7038	E14
7040	F16
7042	F16
7200	I13
7202	I14
7204	I15
7208	I15
7402	I13
7500	E7
7501	I11
7505	I11
9000	G13
9001	E2
9002	G2
9003	B3
9004	C3
9005	C3
9006	C3
9007	B3
9008	H2
9010	B5
9011	B5
1690	B11

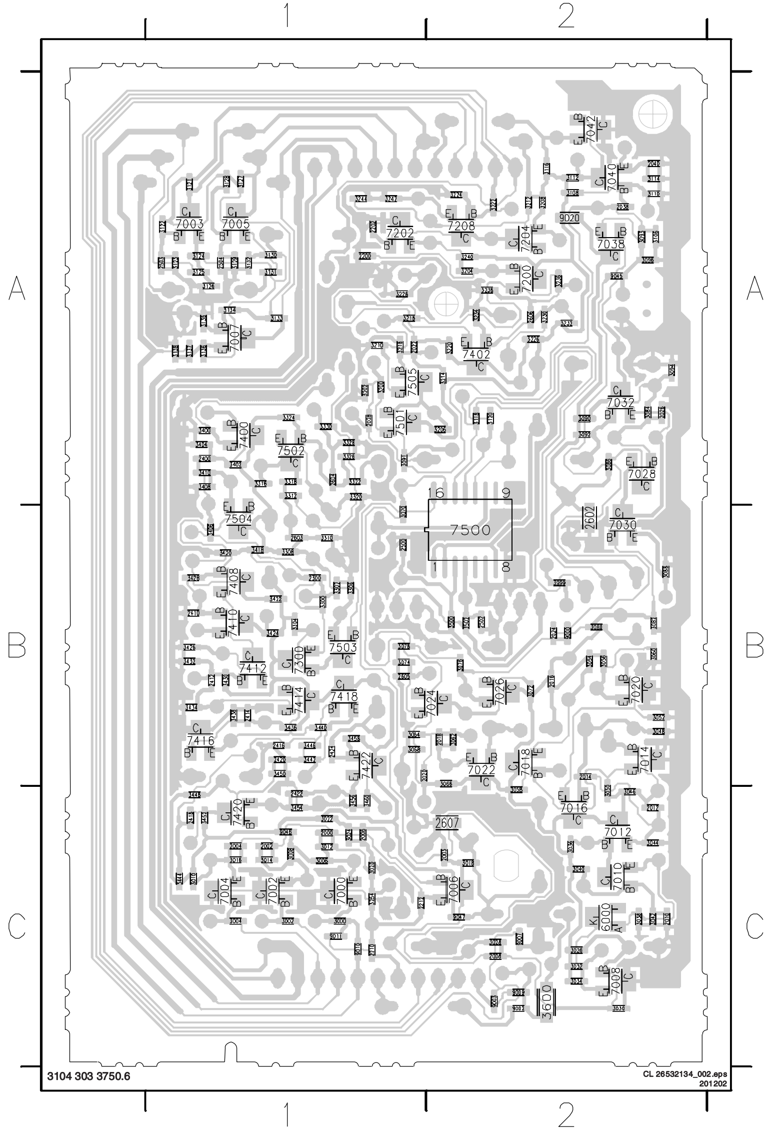
Layout Auto SCAVEM Panel (Top Side)


1
2
A
B
C
9033
9022
1440
9004
9005
9006
PHILIPS
9038
2608
9039
9034
9028
9035
9021
9041
9025
9040
9023
2208
9027
2304
9026
5601
1955
1956
9031
9024
9043
9030
9032
9029
2600
9042
9044
5600
9001
9036
1940
9037
3104 303 3750.6
CL 26532134_001.eps
191202

1440	A2
1940	C2
1955	B1
1956	B2
2208	B1
2304	B2
2600	C1
2608	A2
5600	C1
5601	B1
9001	C2
9004	A2
9005	A2
9006	A2
9021	A2
9022	A1
9023	A1
9024	B1
9025	A1
9026	B2
9027	A2
9028	A2
9029	B2
9030	B2
9031	B1
9032	B1
9033	A1
9034	A1
9035	A2
9036	C1
9037	C1
9038	A2
9039	A2
9040	A1
9041	A1
9042	C1
9043	B1
9044	C2

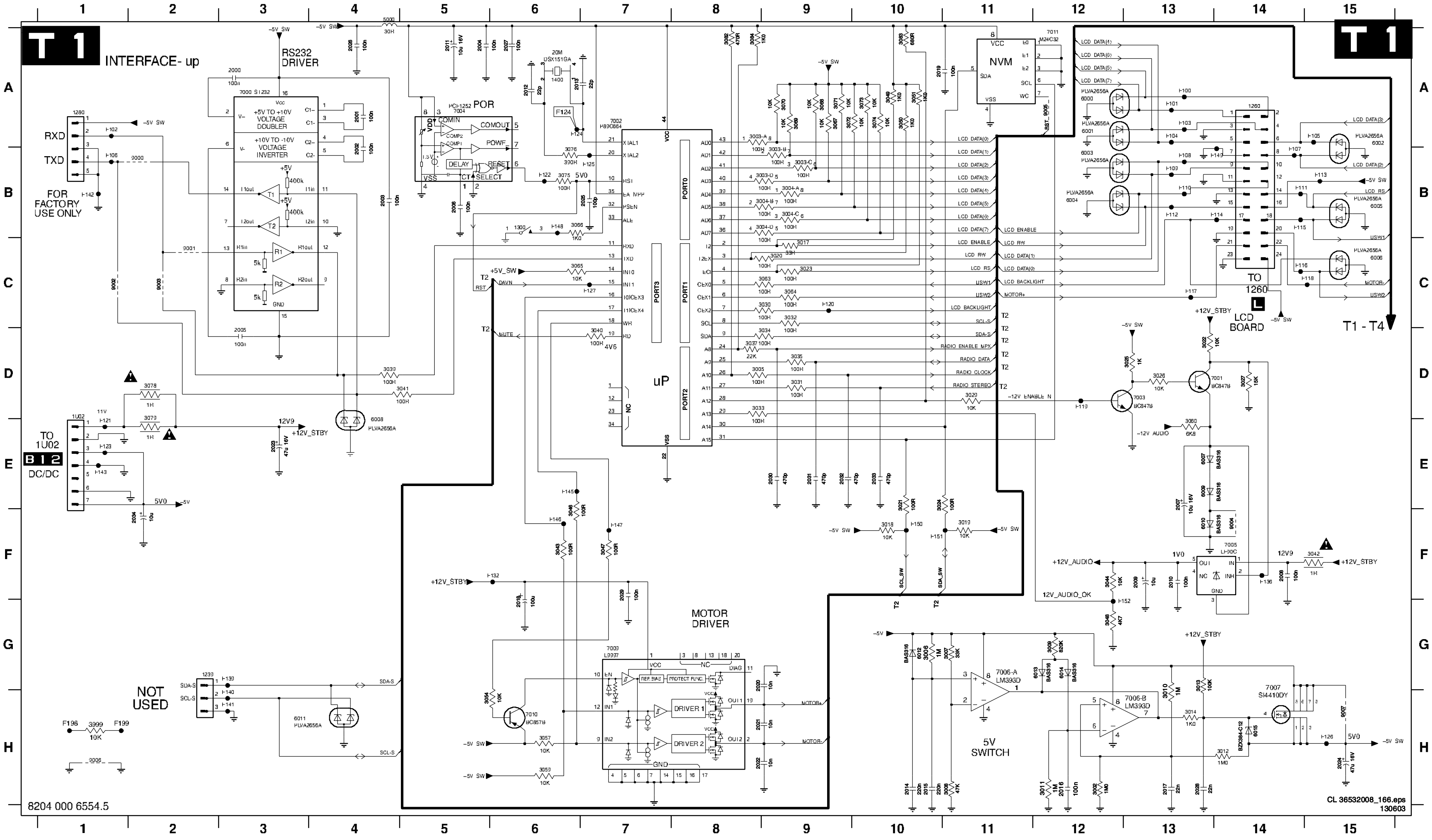
Layout Auto SCAVEM Panel (Bottom Side)

2000	C1	2038	A2	2500	B1	3012	C1	3044	C2	3076	B2	3112	A2	3132	A1	3218	A1	3302	B1	3404	A1	3442	B1	7002	C1	7028	A2	7414	B1	9010	C1
2002	C1	2040	A2	2502	B2	3014	C1	3046	C2	3078	B1	3114	A2	3133	A1	3220	A2	3304	B1	3406	B1	3444	C1	7003	A1	7030	B2	7416	B1	9011	C1
2003	C2	2200	A1	2503	A1	3016	C1	3048	B2	3080	B2	3116	A2	3134	A1	3222	A2	3306	B1	3408	A1	3446	B1	7004	C1	7032	A2	7418	B1	9020	A2
2004	C1	2202	A1	2504	A1	3018	C2	3050	C2	3082	B2	3118	A2	3135	A1	3224	A2	3308	B1	3410	A1	3448	C1	7005	A1	7038	A2	7420	C1	9045	A2
2006	C1	2210	C1	2602	B2	3020	C1	3052	B2	3084	A2	3120	A2	3136	A1	3226	A2	3310	B1	3418	B1	3450	B1	7006	C2	7040	A2	7422	B1	9046	C1
2008	C2	2212	C1	2603	B1	3022	C1	3054	B2	3086	A2	3121	A1	3137	A1	3228	A1	3312	A1	3420	B1	3452	C1	7007	A1	7042	A2	7500	A2	9047	C2
2010	C2	2300	B1	2604	A1	3024	C1	3056	B2	3088	B2	3122	A1	3138	A1	3230	A2	3316	A1	3422	B1	3454	C1	7008	C2	7200	A2	7501	A1		
2012	C2	2400	A1	2605	B1	3026	C2	3058	C2	3090	A2	3123	A1	3200	A1	3232	A2	3318	A1	3424	B1	3456	C1	7010	C2	7202	A2	7502	A1		
2014	B2	2410	B1	2606	A2	3028	C2	3060	B2	3091	A1	3124	A1	3202	A1	3234	A2	3320	A1	3426	B1	3458	B1	7012	C2	7204	A2	7503	B1		
2016	B2	2412	B1	2607	C2	3030	C2	3062	B2	3092	A2	3125	A1	3204	A2	3236	A2	3322	A1	3428	B1	3460	C1	7014	B2	7208	A2	7504	A1		
2018	B2	2414	B1	3000	C1	3032	C2	3064	B1	3093	A2	3126	A1	3206	A2	3238	A2	3324	A1	3430	B1	3500	B2	7016	C2	7300	B1	7505	A1		
2020	B1	2416	B1	3002	C1	3034	C2	3066	B2	3094	A2	3127	A1	3208	A2	3240	A2	3326	A1	3432	B1	3502	B2	7018	B2	7400	A1	9000	B2		
2022	A1	2418	C1	3004	C1	3036	C2	3068	B1	3096	A2	3128	A1	3210	A1	3242	A1	3328	A1	3434	B1	3600	C2	7020	B2	7402	A2	9002	C2		
2024	B2	2420	B1	3006	C1	3038	C2	3070	B1	3106	A2	3129	A1	3212	A2	3244	A1	3330	A1	3436	B1	3999	B2	7022	C2	7408	B1	9003	C2		
2026	A2	2422	C1	3008	C1	3040	C2	3072	B2	3108	A2	3130	A1	3214	A2	3254	C1	3400	A1	3438	B1	6000	C2	7024	B1	7410	B1	9007	C2		
2028	A1	2424	B1	3010	C1	3042	C2	3074	B1	3110	A2	3131	A1	3216	A1	3300	B1	3402	A1	3440	B1	7000	C1	7026	B2	7412	B1	9009	C2		

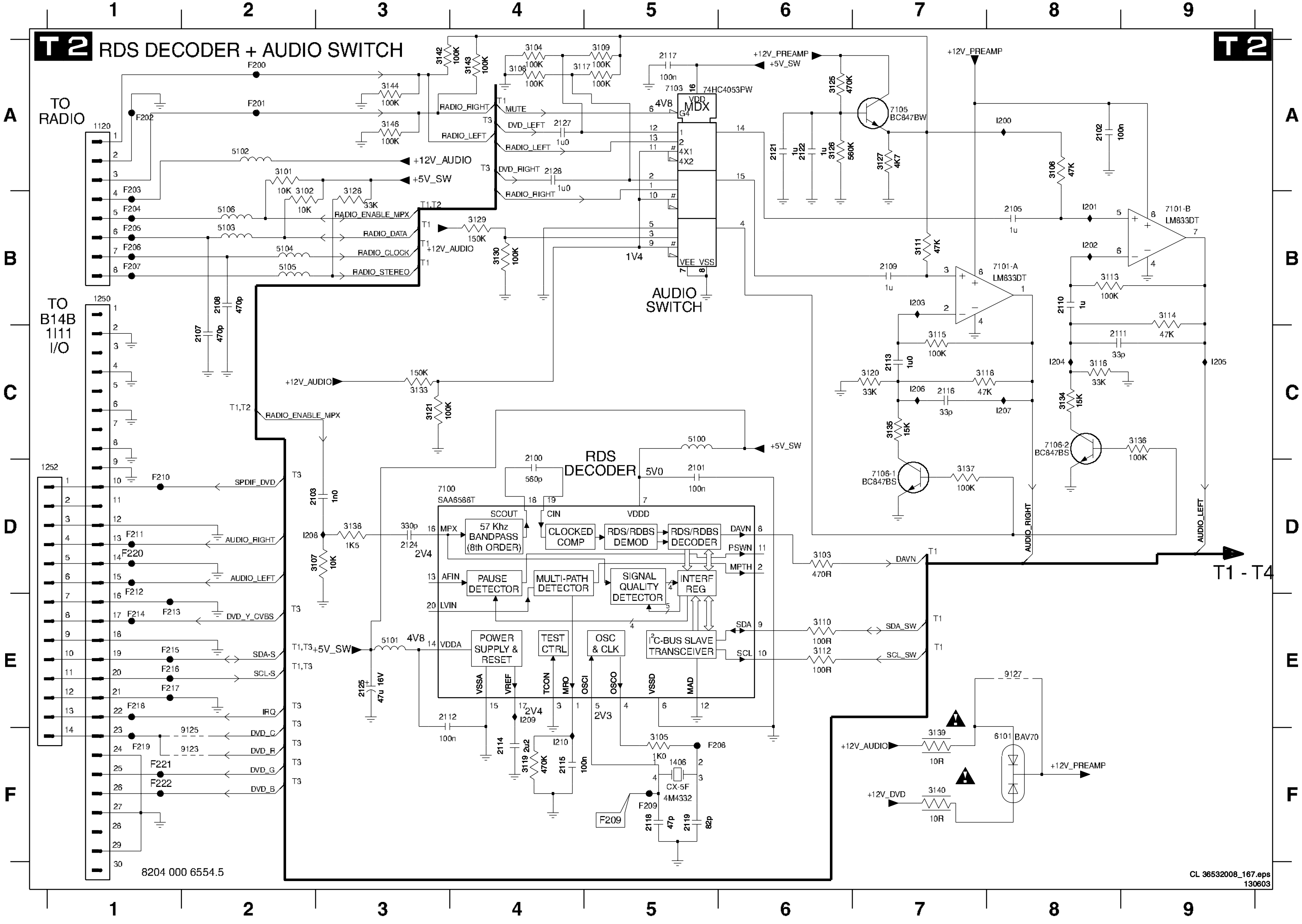

1
2
A
B
C
7042
7040
7003
7005
7202
7208
7204
9020
7038
7200
7007
7402
7505
7032
7400
7501
7502
7028
16
9
1
7500
2602
7030
7504
7408
7410
7503
7300
7412
7020
7418
7024
7026
7414
7416
7422
7018
7022
7014
7016
2607
7420
7012
7010
7004
7002
7000
7006
6000
7008
3600
3104 303 3750.6
CL 26532134_002.eps
201202

Interface Board TDL: Interface uP

1239 G2	2001 A4	2008 F14	2015 H10	2022 H8	2029 F7	3003-A A8	3004-D B9	3011 H12	3020 C9	3027 D14	3035 D9	3044 F12	3054 H5	3066 B6	3073 A10	3083 A10	6004 B12	6011 H3	7002 A7	7009 G7	9004 F14	F103 A13	F110 B13	F117 C13	F124 A6	F140 H3	F148 B6
1260 A14	2002 B4	2009 F13	2016 H12	2023 E3	2030 E9	3003-B B9	3005 D8	3012 H14	3021 E10	3029 D11	3037 D8	3046 F6	3057 H6	3067 A9	3074 A10	3084 A8	6005 B15	6012 G10	7003 D13	7010 H6	9005 A12	F104 A13	F111 B14	F118 C15	F125 B7	F141 H3	F149 B14
1280 A1	2003 B4	2010 F13	2017 H13	2024 H15	2031 E9	3003-C B9	3006 G10	3013 G13	3022 D13	3030 C9	3039 D4	3047 F7	3059 H6	3068 A9	3075 B6	3999 H1	6006 C15	6013 G12	7004 A5	7011 A12	9006 H1	F105 A15	F112 B13	F119 D12	F126 H15	F142 B1	F150 F10
1300 B6	2004 A5	2011 A5	2018 G6	2025 B7	2032 E9	3003-D B9	3007 G11	3014 H13	3023 C9	3031 D9	3040 D7	3048 G12	3060 E13	3069 A9	3076 B6	6000 A12	6007 E13	6014 G12	7005 F14	9000 B2	9007 H15	F106 B1	F113 B15	F120 C9	F127 C7	F143 E1	F151 F10
1400 A6	2005 D3	2012 A6	2019 A10	2026 A4	2033 E10	3004-A B9	3008 H11	3017 C9	3024 E10	3032 C9	3041 D5	3049 A10	3063 C9	3070 A9	3078 D2	6001 A12	6008 E4	6015 H14	7006-A G11	9001 C2	F100 A13	F107 B14	F114 B14	F121 E1	F132 F6	F145 E6	F152 G13
1U02 D1	2006 B5	2013 A6	2020 G8	2027 A6	2034 F2	3004-B B9	3009 G12	3018 F10	3025 D13	3033 D8	3042 F15	3050 A10	3064 C9	3071 A9	3079 E2	6002 A15	6009 E13	7000 A3	7006-B H13	9002 C1	F101 A13	F108 B13	F115 B14	F122 B6	F136 F14	F146 F6	F198 H1
2000 A3	2007 E13	2014 H10	2021 H8	2028 H13	3002 H12	3004-C B9	3010 H13	3019 F11	3026 D13	3034 D9	3043 F6	3051 A10	3065 C6	3072 A9	3082 A8	6003 B12	6010 F13	7001 D13	7007 G14	9003 C2	F102 A1	F109 B13	F116 C14	F123 E1	F139 G3	F147 F7	F199 H2

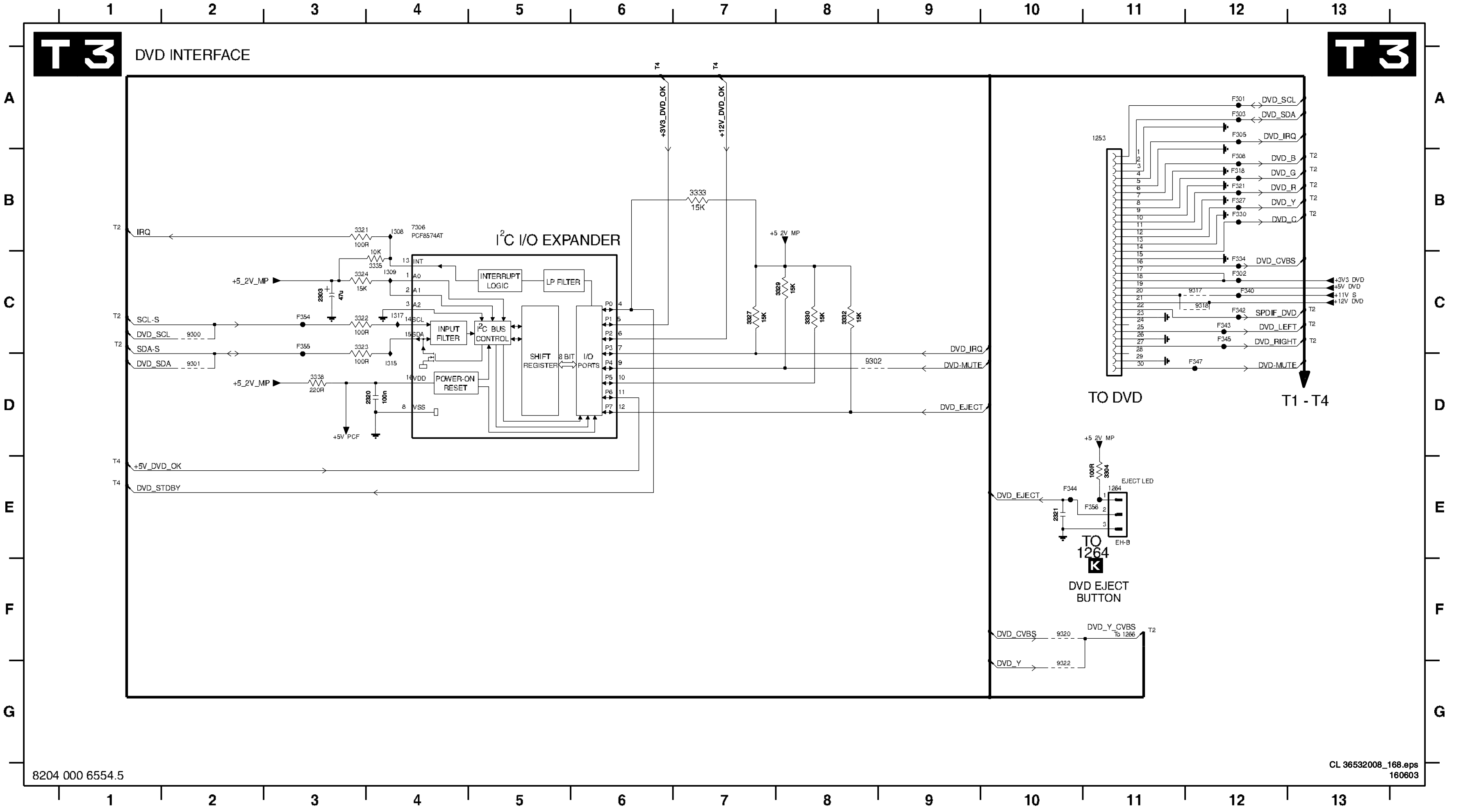

T 1
INTERFACE- up
RS232 DRIVER
7000 ST232
+5V TO +10V VOLTAGE DOUBLER
+10V TO -10V VOLTAGE INVERTER
RXD
TXD
FOR FACTORY USE ONLY
POR
PCF1252 7004
COMOUT
POWF
RESET
DELAY
SELECT
20M DSX151GA
7002 P83C664
uP
PORT0
PORT1
PORT2
PORT3
NVM
7011 M24C32
T 1
LCD BOARD
TO 1260
T1 - T4
LCD DATA(0)
LCD DATA(1)
LCD DATA(2)
LCD DATA(3)
LCD DATA(4)
LCD DATA(5)
LCD DATA(6)
LCD DATA(7)
LCD ENABLE
LCD RW
LCD RS
USW1
USW2
LCD BACKLIGHT
SCL-S
SDA-S
RADIO ENABLE MPX
RADIO DATA
RADIO CLOCK
RADIO STEREO
-12V ENABLE N
MOTOR+
MOTOR-
MUTE
DAVN
RST
TO 1U02
B12
DC/DC
12V9
+12V_STBY
5V0
-5V SW
+5V_SW
+12V_AUDIO
12V_AUDIO_OK
-12V AUDIO
7005 LF90C
7001 BC847B
7003 BC847B
MOTOR DRIVER
7009 L9997
DRIVER 1
DRIVER 2
7010 BC857B
NOT USED
5V SWITCH
7006-A LM393D
7006-B LM393D
7007 SI4410DY
PLVA2656A
8204 000 6554.5
CL 36532008_166.eps 130603
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H

Interface Board TDL: RDS Decoder and Audio Switch


T2
RDS DECODER + AUDIO SWITCH
TO RADIO
1120
TO B14B 1I11 I/O
1250
1252
AUDIO SWITCH
7103
74HC4053PW
MDX
RDS DECODER
7100
SAA6588T
57 Khz BANDPASS (8th ORDER)
CLOCKED COMP
RDS/RDBS DEMOD
RDS/RDBS DECODER
PAUSE DETECTOR
MULTI-PATH DETECTOR
SIGNAL QUALITY DETECTOR
INTERF REG
POWER SUPPLY & RESET
TEST CTRL
OSC & CLK
I²C-BUS SLAVE TRANSCEIVER
7101-A LM833DT
7101-B LM833DT
7105 BC847BW
7106-1 BC847BS
7106-2 BC847BS
6101 BAV70
1406 CX-5F 4M4332
+12V_AUDIO
+5V_SW
+12V_PREAMP
+12V_DVD
RADIO_RIGHT
RADIO_LEFT
DVD_LEFT
DVD_RIGHT
MUTE
RADIO_ENABLE_MPX
RADIO_DATA
RADIO_CLOCK
RADIO_STEREO
SPDIF_DVD
AUDIO_RIGHT
AUDIO_LEFT
DVD_Y_CVBS
SDA-S
SCL-S
IRQ
DVD_C
DVD_R
DVD_G
DVD_B
DAVN
SDA_SW
SCL_SW
T1 - T4
8204 000 6554.5
CL 36532008_167.eps
130603

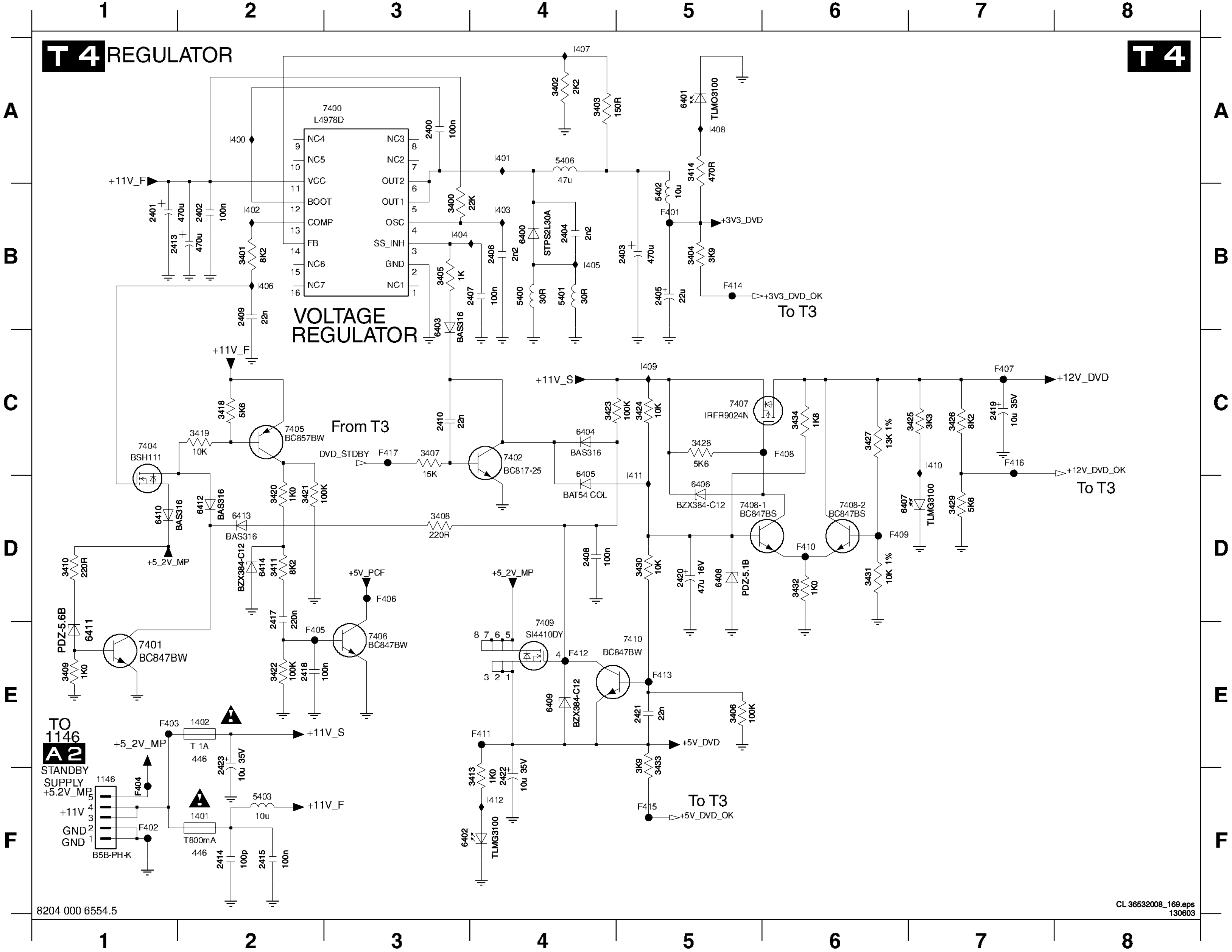
1120	A1
1250	B1
1252	D1
1406	F5
2100	D4
2101	D5
2102	A8
2103	D2
2105	B8
2107	C2
2108	B2
2109	B7
2110	B8
2111	C8
2112	E3
2113	C7
2114	F4
2115	F4
2116	C7
2117	A5
2118	F5
2119	F5
2121	A6
2122	A6
2124	D3
2125	E3
2127	A4
2128	A4
3101	A2
3102	B2
3103	D6
3104	A4
3105	F5
3106	A8
3107	D3
3108	A4
3109	A5
3110	E6
3111	B7
3112	E6
3113	B8
3114	B9
3115	C7
3116	C8
3117	A4
3118	C7
3119	F4
3120	C7
3121	C3
3125	A6
3126	A6
3127	A7
3128	B3
3129	B4
3130	B4
3133	C3
3134	C8
3135	C7
3136	C9
3137	D7
3138	D3
3139	F7
3140	F7
3142	A3
3143	A4
3144	A3
3146	A3
5100	C5
5101	E3
5102	A2
5103	B2
5104	B2
5105	B2
5106	B2
6101	F8
7100	D3
7101-A	B8
7101-B	B9
7103	A5
7105	A7
7106-1	D7
7106-2	C8
9123	F2
9125	F2
9127	E8
F200	A2
F201	A2
F202	A1
F203	B1
F204	B1
F205	B1
F206	B1
F207	B1
F208	F5
F209	F5
F210	D1
F211	D1
F212	E1
F213	E1
F214	E1
F215	E1
F216	E1
F217	E1
F218	E1
F219	F1
F220	D1
F221	F1
F222	F1
I200	A8
I201	B8
I202	B8
I203	B7
I204	C8
I205	C9
I206	C7
I207	C8
I208	D2
I209	E4
I210	F4

Interface Board TDL: DVD Interface


T 3
DVD INTERFACE
1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
T2
IRQ
3321
100R
I308
7306
PCF8574AT
I²C I/O EXPANDER
10K
3335
+5_2V_MP
3324
15K
I309
2303
47u
13 INT
1 A0
2 A1
3 A2
14 SCL
15 SDA
16 VDD
8 VSS
INTERRUPT LOGIC
LP FILTER
INPUT FILTER
I²C BUS CONTROL
SHIFT REGISTER
8 BIT
I/O PORTS
POWER-ON RESET
P0 4
P1 5
P2 6
P3 7
P4 9
P5 10
P6 11
P7 12
SCL-S
DVD_SCL
9300
SDA-S
DVD_SDA
9301
F354
F355
3322
100R
3323
100R
I317
I315
3338
220R
2320
100n
+5V PCF
T4
+5V_DVD_OK
DVD_STDBY
+3V3_DVD_OK
+12V_DVD_OK
3333
15K
+5 2V MP
3327 15K
3329 15K
3330 15K
3332 15K
DVD_IRQ
DVD-MUTE
9302
DVD_EJECT
1253
F301 DVD_SCL
F303 DVD_SDA
F305 DVD_IRQ
F308 DVD_B
F318 DVD_G
F321 DVD_R
F327 DVD_Y
F330 DVD_C
F334 DVD_CVBS
F302
+3V3 DVD
+5V DVD
9317
F340
+11V S
9318
+12V DVD
F342 SPDIF_DVD
F343 DVD_LEFT
F345 DVD_RIGHT
F347 DVD-MUTE
TO DVD
T1 - T4
+5 2V MP
100R
3304
EJECT LED
1264
DVD_EJECT
F344
F356
2321
EH-B
TO 1264
K
DVD EJECT BUTTON
DVD_CVBS
9320
DVD_Y_CVBS
To 1266
DVD_Y
9322
8204 000 6554.5
CL 36532008_168.eps
160603

1253	A11
1264	E11
2303	C3
2320	D4
2321	E10
3304	E11
3321	B3
3322	C3
3323	C3
3324	C3
3327	C7
3329	C8
3330	C8
3332	C8
3333	B7
3335	C4
3338	D3
7306	B4
9300	C2
9301	D2
9302	D7
9317	C12
9318	C12
9320	F10
9322	G10
F301	A12
F302	C12
F303	A12
F305	A12
F308	B12
F318	B12
F321	B12
F327	B12
F330	B12
F334	C12
F340	C12
F342	C12
F343	C12
F344	E10
F345	C12
F347	D12
F354	C3
F355	C3
F356	E11
I308	B4
I309	C4
I315	D4
I317	C4

Interface Board TDL: Regulator


1
2
3
4
5
6
7
8
A
B
C
D
E
F
T 4
REGULATOR
T 4
7400
L4978D
NC4
NC5
VCC
BOOT
COMP
FB
NC6
NC7
NC3
NC2
OUT2
OUT1
OSC
SS_INH
GND
NC1
VOLTAGE
REGULATOR
+11V_F
I400
I401
I402
I403
I404
I405
I406
I407
I408
I409
I410
I411
I412
2400 100n
2401 470u
2402 100n
2413 470u
3400 22K
3401 8K2
3402 2K2
3403 150R
5406 47u
5402 10u
6401 TLMO3100
3414 470R
F401
+3V3_DVD
3404 3K9
F414
+3V3_DVD_OK
To T3
2403 470u
2405 22u
2404 2n2
6400 STPS2L30A
2406 2n2
3405 1K
2407 100n
5400 30R
5401 30R
6403 BAS316
2409 22n
+11V_F
3418 5K6
7405 BC857BW
From T3
3419 10K
7404 BSH111
6410 BAS316
6412 BAS316
6413 BAS316
3420 1K0
3421 100K
DVD_STDBY
F417
3407 15K
2410 22n
7402 BC817-25
+11V_S
6404 BAS316
6405 BAT54 COL
3423 100K
3424 10K
7407 IRFR9024N
3428 5K6
F408
6406 BZX384-C12
3434 1K8
3427 13K 1%
3425 3K3
3426 8K2
2419 10u 35V
F407
+12V_DVD
F416
+12V_DVD_OK
To T3
6407 TLMG3100
3429 5K6
3408 220R
7408-1 BC847BS
7408-2 BC847BS
F410
F409
3410 220R
+5_2V_MP
6414 BZX384-C12
3411 8K2
+5V_PCF
F406
2408 100n
3430 10K
2420 47u 16V
6408 PDZ-5.1B
3432 1K0
3431 10K 1%
PDZ-5.6B
6411
7401 BC847BW
3409 1K0
2417 220n
F405
7406 BC847BW
3422 100K
2418 100n
+5_2V_MP
7409 SI4410DY
8 7 6 5
4
3 2 1
F412
7410 BC847BW
F413
6409 BZX384-C12
2421 22n
3406 100K
TO 1146
A2
STANDBY SUPPLY
F403
1402 T 1A 446
+11V_S
2423 10u 35V
+5_2V_MP
F404
1146
+5.2V_MP
+11V
GND
GND
5 4 3 2 1
F402
B5B-PH-K
5403 10u
+11V_F
1401 T800mA 446
2414 100p
2415 100n
F411
+5V_DVD
3413 1K0
2422 10u 35V
6402 TLMG3100
3433 3K9
To T3
F415
+5V_DVD_OK
8204 000 6554.5
CL 36532008_169.eps 130603

1146	F1
1401	F2
1402	E2
2400	A3
2401	B1
2402	B2
2403	B5
2404	B4
2405	B5
2406	B4
2407	B4
2408	D4
2409	B2
2410	C3
2413	B1
2414	F2
2415	F2
2417	D2
2418	E2
2419	C7
2420	D5
2421	E5
2422	F4
2423	E2
3400	B3
3401	B2
3402	A4
3403	A4
3404	B5
3405	B3
3406	E5
3407	C3
3408	D3
3409	E1
3410	D1
3411	D2
3413	F4
3414	A5
3418	C2
3419	C2
3420	D2
3421	D2
3422	E2
3423	C4
3424	C5
3425	C7
3426	C7
3427	C6
3428	C5
3429	D7
3430	D5
3431	D6
3432	D6
3433	E5
3434	C6
5400	B4
5401	B4
5402	B5
5403	F2
5406	A4
6400	B4
6401	A5
6402	F3
6403	B3
6404	C4
6405	D4
6406	D5
6407	D6
6408	D5
6409	E4
6410	D1
6411	E1
6412	D2
6413	D2
6414	D2
7400	A3
7401	E1
7402	C4
7404	C1
7405	C2
7406	E3
7407	C5
7408-1	D5
7408-2	D6
7409	E4
7410	E5
F401	B5
F402	F1
F403	E1
F404	F1
F405	E2
F406	D3
F407	C7
F408	C6
F409	D6
F410	D6
F411	E4
F412	E4
F413	E5
F414	B5
F415	F5
F416	C7
F417	C3
I400	A2
I401	A4
I402	B2
I403	B4
I404	B3
I405	B4
I406	B2
I407	A4
I408	A5
I409	C5
I410	C7
I411	C5
I412	F4

Layout Interface Board TDL (Top Side)

1120 C1
1146 A2
1239 B2
1250 B2
1252 B2
1253 A2
1260 B1
1264 A1
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2422 A2
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3322 B2
3323 A2
3324 B2
3327 B2
3329 A2
3330 A2
3332 A2
3333 B2
3335 B2
3338 A2
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3403 A1
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6009 C2
6010 C2
6011 B2
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6408 A2
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7401 A2
7402 B2
7404 A1
7405 A1
7406 A2
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7408 A2
7409 A2
7410 A2
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9002 C1
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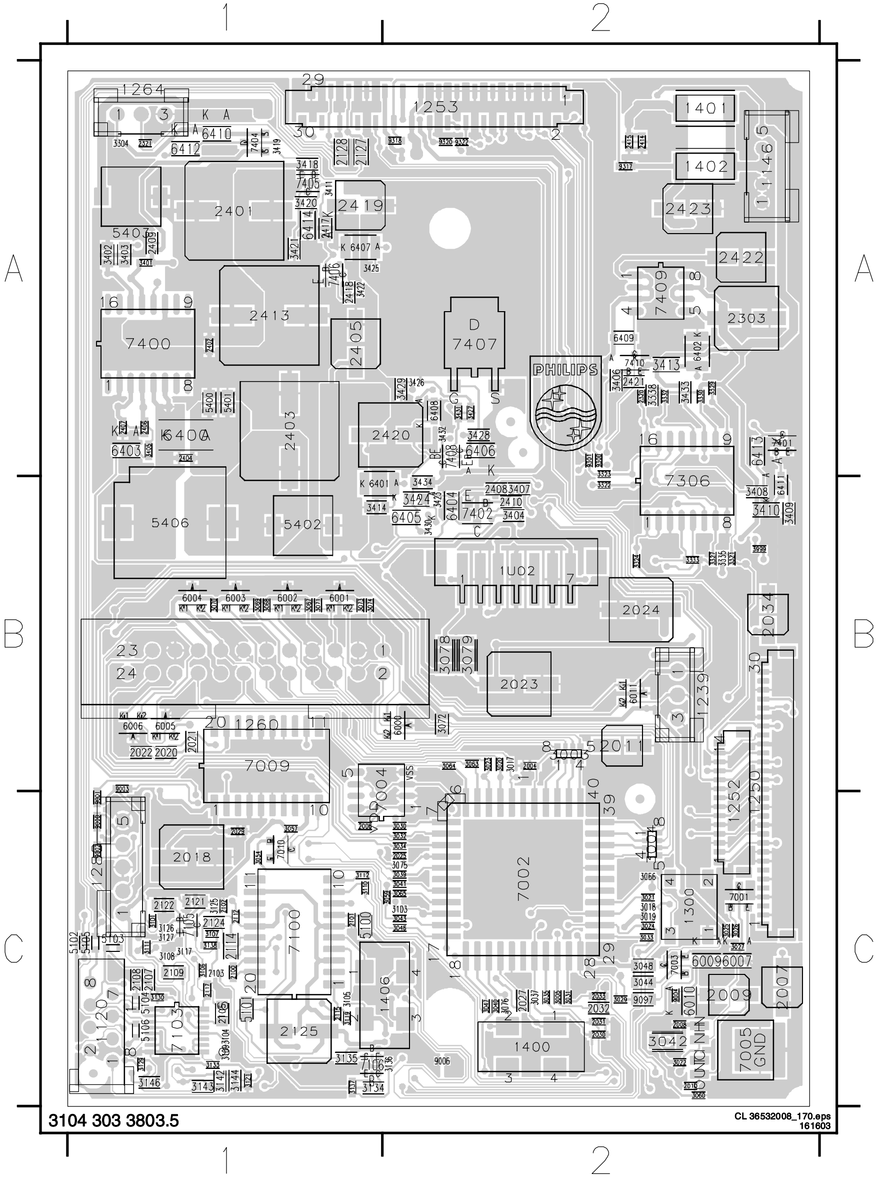
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6009
6010
2009
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7005 GND
2007
3104 303 3803.5
CL 36532008_170.eps
161603

Layout Interface Board TDL (Bottom Side)

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1264 A2
1280 C2
2000 C2
2001 C2
2002 C2
2003 B2
2005 C2
2012 C1
2013 C1
2014 B1
2015 B1
2016 B1
2017 B1
2019 C1
2026 C1
2028 B1
2110 C2
2111 C2
2113 C2
2116 C2
2118 C2
2119 C1
2400 A2
3002 B1
3006 B1
3007 B1
3008 B1
3009 B2
3010 B1
3011 B1
3012 B1
3013 B1
3014 B1
3049 C1
3050 C1
3051 C1
3082 C1
3083 C1
3084 C1
3102 C2
3113 C2
3114 C2
3115 C2
3116 C2
3118 C2
3120 C2
3128 C2
3139 A2
3140 B2
3400 A2
5000 C1
6008 C2
6012 B1
6013 B2
6014 B2
6015 B1
6101 B2
7000 B2
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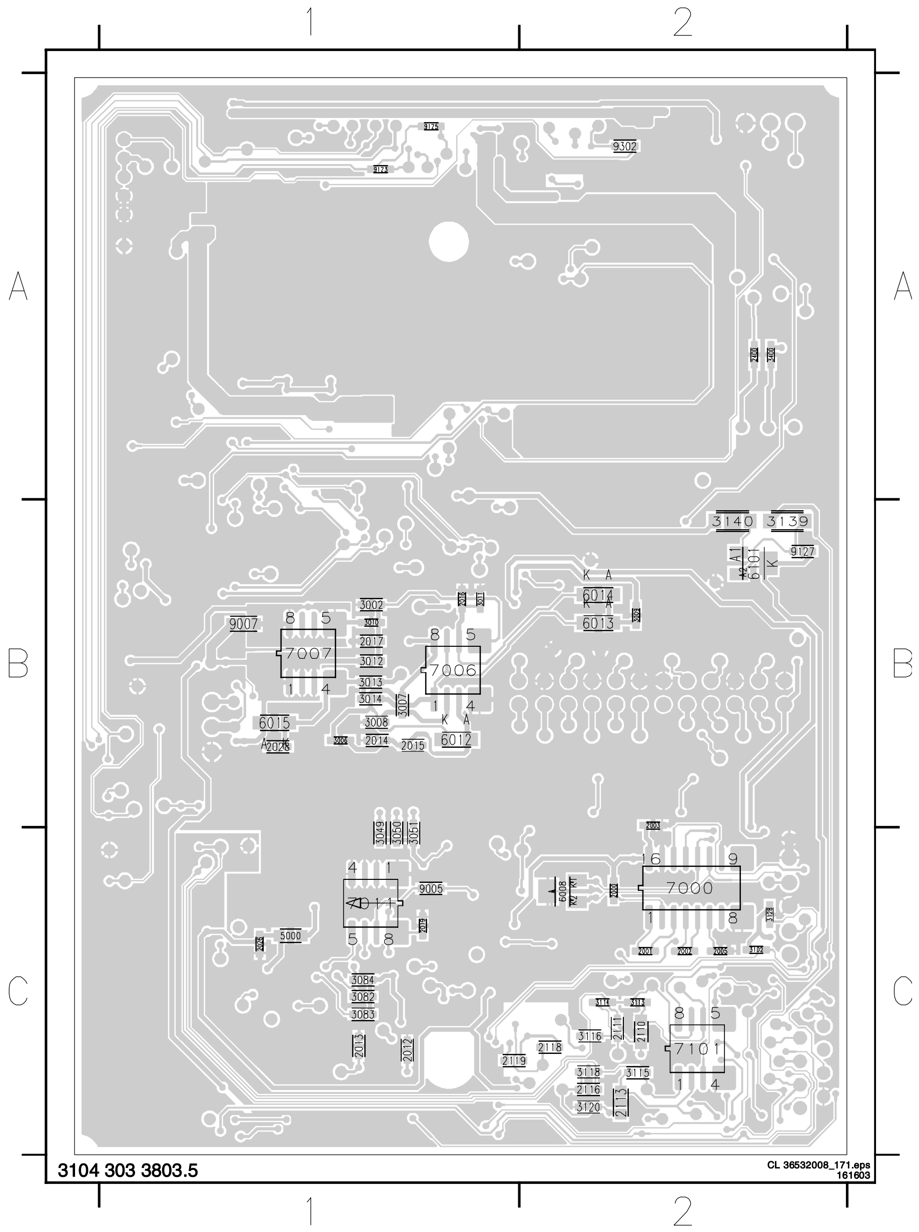
9302 A2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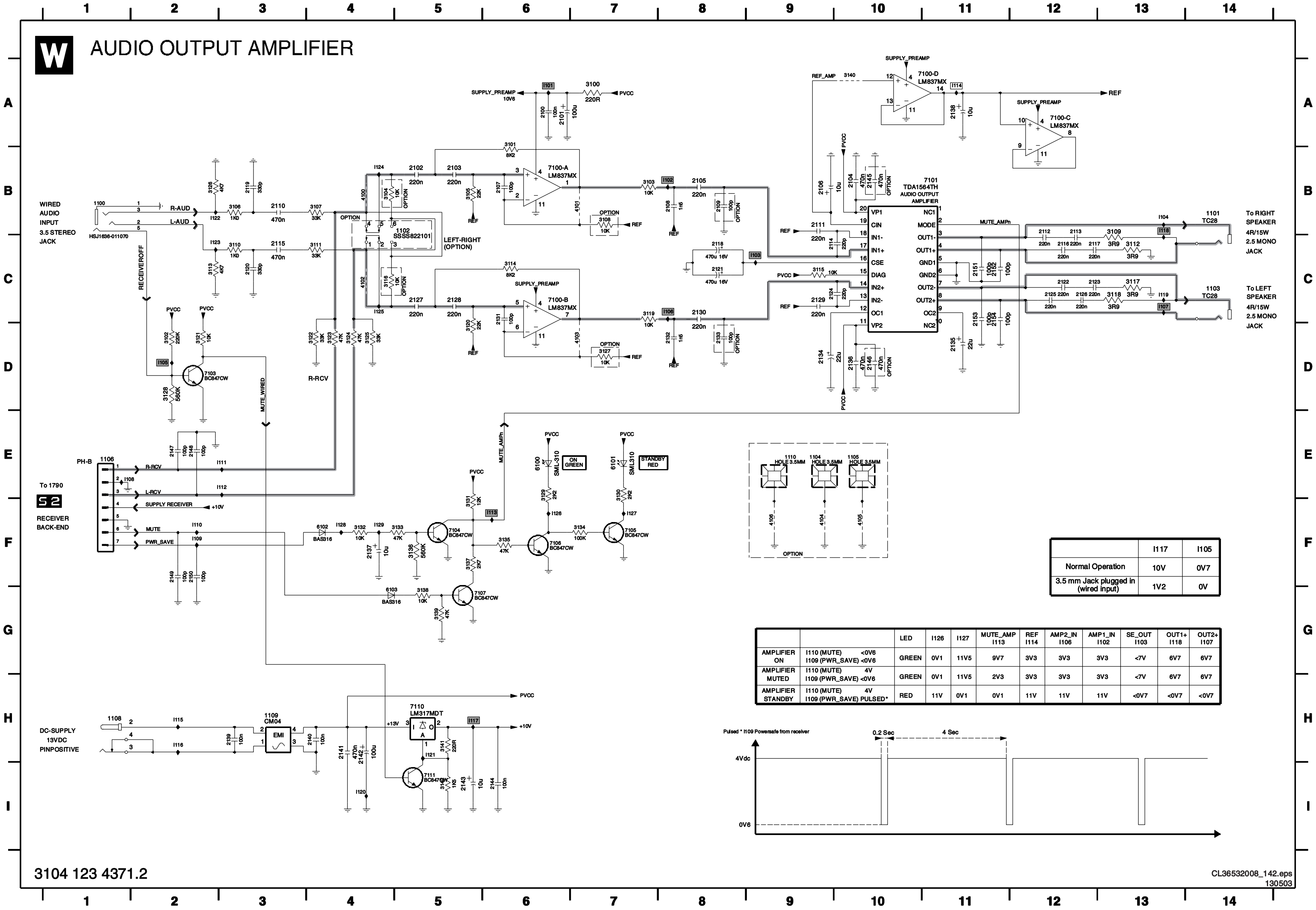
CL 36532008_171.eps
161603

Audio Output Amplifier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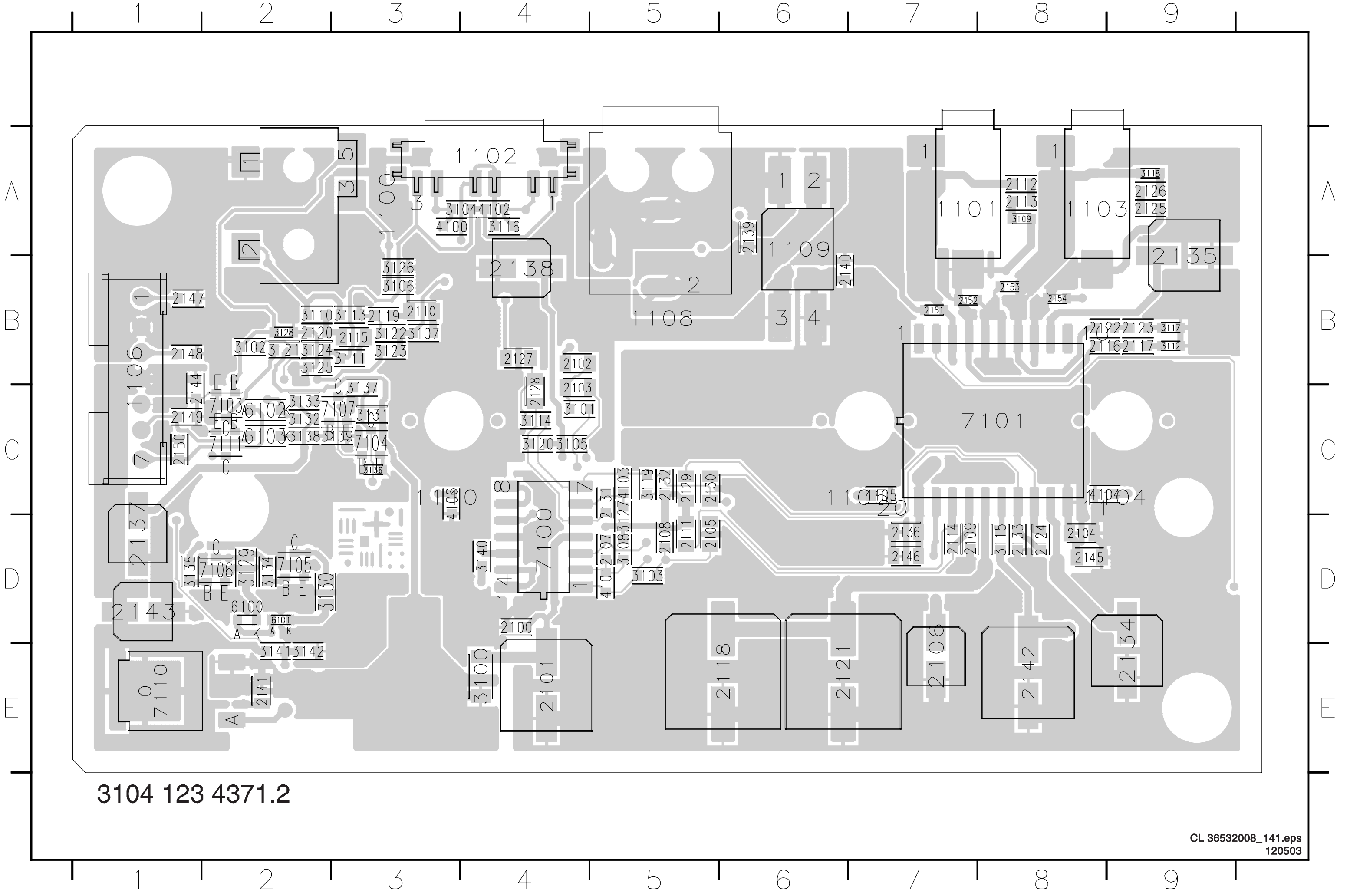
AUDIO OUTPUT AMPLIFIER
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
WIRED AUDIO INPUT 3.5 STEREO JACK
1100
HSJ1636-011070
R-AUD
L-AUD
RECEIVEROFF
SUPPLY_PREAMP
10V6
PVCC
REF
REF_AMP
7100-A LM837MX
7100-B LM837MX
7100-C LM837MX
7100-D LM837MX
7101 TDA1564TH AUDIO OUTPUT AMPLIFIER
VP1 CIN IN1- IN1+ CSE DIAG IN2+ IN2- OC1 VP2
NC1 MODE OUT1- OUT1+ GND1 GND2 OUT2- OUT2+ OC2 NC2
MUTE_AMPn
1102 SSSS822101
LEFT-RIGHT (OPTION)
OPTION
1101 TC28
To RIGHT SPEAKER 4R/15W 2.5 MONO JACK
1103 TC28
To LEFT SPEAKER 4R/15W 2.5 MONO JACK
R-RCV
MUTE_WIRED
MUTE_AMPn
7103 BC847CW
PH-B 1106
To 1790
S2
RECEIVER BACK-END
R-RCV
L-RCV
SUPPLY RECEIVER +10V
MUTE
PWR_SAVE
6102 BAS316
6103 BAS316
7104 BC847CW
7105 BC847CW
7106 BC847CW
7107 BC847CW
6100 SML-310
ON GREEN
6101 SML-310
STANDBY RED
1110 HOLE 3.5MM
1104 HOLE 3.5MM
1105 HOLE 3.5MM
OPTION
DC-SUPPLY 13VDC PINPOSITIVE
1108
1109 CM04
EMI
7110 LM317MDT
7111 BC847CW
+13V
+10V
PVCC
Pulsed * I109 Powersafe from receiver
0.2 Sec
4 Sec
4Vdc
0V6
3104 123 4371.2
CL36532008_142.eps
130503

	I117	I105
Normal Operation	10V	0V7
3.5 mm Jack plugged in (wired input)	1V2	0V

		LED	I126	I127	MUTE_AMP I113	REF I114	AMP2_IN I106	AMP1_IN I102	SE_OUT I103	OUT1+ I118	OUT2+ I107
AMPLIFIER ON	I110 (MUTE) <0V6 I109 (PWR_SAVE) <0V6	GREEN	0V1	11V5	9V7	3V3	3V3	3V3	<7V	6V7	6V7
AMPLIFIER MUTED	I110 (MUTE) 4V I109 (PWR_SAVE) <0V6	GREEN	0V1	11V5	2V3	3V3	3V3	3V3	<7V	6V7	6V7
AMPLIFIER STANDBY	I110 (MUTE) 4V I109 (PWR_SAVE) PULSED*	RED	11V	0V1	0V1	11V	11V	11V	<0V7	<0V7	<0V7

1100	B1
1101	B14
1102	B5
1103	C14
1104	E8
1105	E9
1106	E1
1108	H1
1109	H4
1110	E8
2100	A6
2101	A6
2102	B5
2103	B5
2104	B10
2105	B8
2106	B9
2107	B6
2108	B8
2109	B8
2110	B3
2111	B9
2112	B12
2113	B12
2114	C9
2115	C3
2116	C12
2117	C12
2118	C8
2119	B3
2120	C3
2121	C8
2122	C12
2123	C12
2124	C9
2125	C12
2126	C12
2127	C5
2128	C5
2129	C9
2130	C8
2131	C6
2132	D8
2133	D8
2134	D9
2135	D11
2136	D10
2137	F3
2138	A11
2139	H3
2140	H4
2141	H5
2142	H5
2143	I6
2144	I6
2145	B10
2146	D10
2147	E2
2148	E2
2149	F2
2150	F2
2151	C11
2152	C11
2153	C11
2154	C11
3100	A7
3101	A6
3102	D2
3103	B7
3104	B4
3105	B5
3106	B3
3107	B4
3108	B7
3109	B13
3110	C3
3111	C4
3112	C13
3113	C2
3114	C6
3115	C9
3116	C4
3117	C13
3118	C13
3119	C7
3120	D5
3121	D2
3122	D4
3123	D4
3124	D4
3125	D4
3126	B2
3127	D7
3128	D2
3129	E5
3130	E6
3131	F5
3132	F3
3133	F4
3134	F6
3135	F5
3136	F4
3137	F5
3138	G4
3139	G4
3140	A10
3141	H6
3142	I6
4100	B4
4101	B7
4102	C4
4103	D7
4104	F9
4105	F9
4106	F8
6100	E5
6101	E6
6102	F3
6103	G4
7100-A	B6
7100-B	C6
7100-C	A12
7100-D	A10
7101	B11
7103	D2
7104	F4
7105	F6
7106	F5
7107	G5
7110	H6
7111	I6
I101	A6
I102	B8
I103	C9
I104	B13
I105	D2
I106	C8
I107	C13
I108	E1
I109	F2
I110	F2
I111	E3
I112	E3
I113	F5
I114	A11
I115	H3
I116	H3
I117	H6
I118	B13
I119	C13
I120	I5
I121	H6
I122	B2
I123	C2
I124	B4
I125	C4
I126	F5
I127	F6
I128	F3
I129	F4

Layout Audio Output Amplifier (Top Side)


1
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7
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9
A
B
C
D
E
1102
1108
1109
1101
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7100
1106
2118
2121
2106
2142
2134
2101
3100
2143
2137
7110
2135
2138
3104 123 4371.2
CL 36532008_141.eps
120503

1100	A3	2139	A6	3130	D2
1101	A7	2140	B6	3131	C3
1102	A4	2141	E2	3132	C2
1103	A8	2142	E8	3133	C2
1106	B1	2143	D1	3134	D2
1108	B5	2144	C1	3135	D1
1109	A6	2145	D8	3136	C3
2100	D4	2146	D7	3137	C3
2101	E4	2147	B1	3138	C2
2102	B4	2148	B1	3139	C3
2103	C4	2149	C1	3140	D4
2104	D8	2150	C1	3141	E2
2105	D5	2151	B7	3142	E2
2106	E7	2152	B7	4100	A3
2107	D5	2153	B8	4101	D5
2108	D5	2154	B8	4102	A4
2109	D7	3100	E4	4103	C5
2110	B3	3101	C4	4104	C8
2111	D5	3102	B2	4105	C7
2112	A8	3103	D5	4106	C3
2113	A8	3104	A4	6100	D2
2114	D7	3105	C4	6101	D2
2115	B3	3106	B3	6102	C2
2116	B8	3107	B3	6103	C2
2117	B9	3108	D5	7100	D4
2118	E6	3109	A8	7101	C8
2119	B3	3110	B2	7103	C2
2120	B2	3111	B3	7104	C3
2121	E6	3112	B9	7105	D2
2122	B8	3113	B3	7106	D2
2123	B9	3114	C4	7107	C3
2124	D8	3115	D8	7110	E1
2125	A9	3116	A4	7111	C2
2126	A9	3117	B9		
2127	B4	3118	A9		
2128	C4	3119	C5		
2129	C5	3120	C4		
2130	C5	3121	B2		
2131	C5	3122	B3		
2132	C5	3123	B3		
2133	D8	3124	B2		
2134	E9	3125	B2		
2135	B9	3126	B3		
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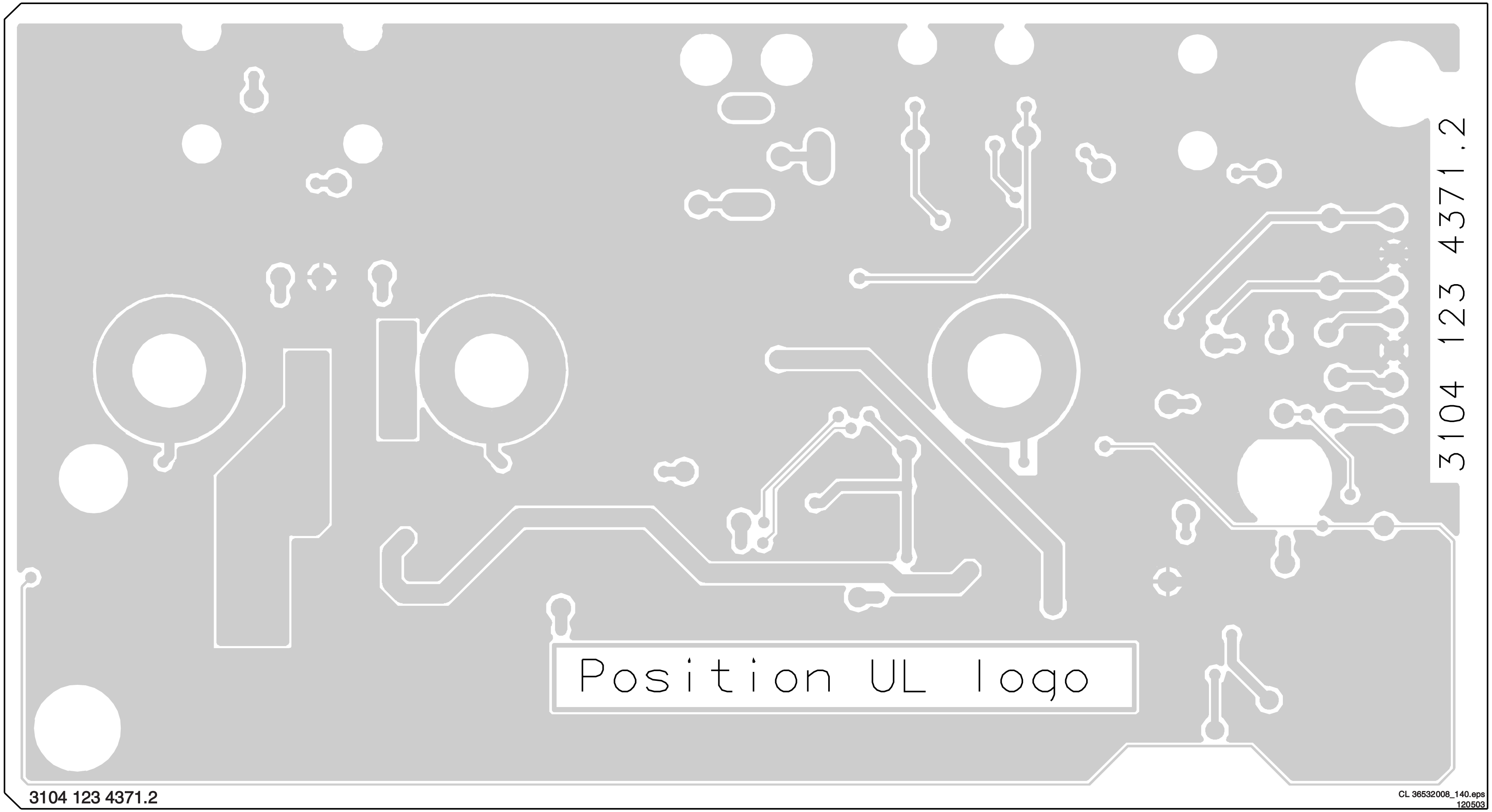
Layout Audio Output Amplifier (Bottom Side)


Position UL logo
3104 123 4371.2
3104 123 4371.2
CL 36532008_140.eps
120503

Personal Notes:

8. Electrical Alignments

Index of this chapter:
1. General alignment conditions
2. Hardware alignments
3. Software alignments
4. Option settings

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:
- Power supply voltage: 230 V_ac / 50 Hz (± 10 %).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 minutes.
- Measure voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
  Caution: never use heatsinks as ground.
- Test probe: Ri > 10 M ohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

Perform all electrical adjustments with the following default settings (for all CRTs):

Table 8-1 Default settings

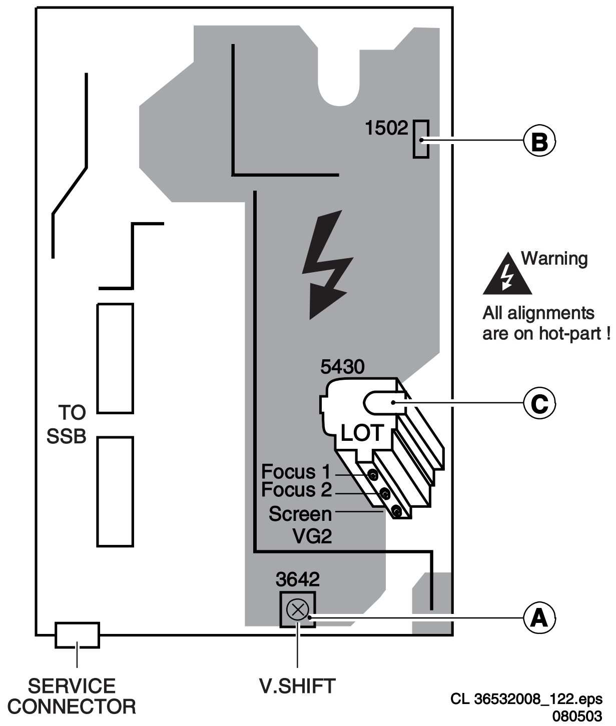
Alignment	Setting	Remark
[Active Control]	Off	Button on RC
[Menu] -> Picture		Via user menu
Contrast	75	
Brightness	40	
Colour	28 inch: 52 32 inch: 53 36 inch: 54	
Sharpness	3	
Tint	Normal	
Digital Options	Pixel Plus	
Dynamic Contrast	Off	
DNR	Off	
Colour Enhan.	Off	
Picture Format	Widescreen	
Alignm. -> General		Via SAM
Peak White Limiter	9	
Soft Clipper	Pwl + 0%	
Luma Gain	2	
Drive	Red: 32 Green: 32 Blue: 32 Cathode: 15 Rd BL offset: 7 Bk BL offset: 7 Col.temp: norm.	
Luminance Delay	PAL BG: 9 PAL I: 9 SECAM: 11 Bypass: 10	

8.1.2 Adjustment Sequence

Use the following adjustment sequence:
1. Set the correct TV-set "options" (after storing, re-start the set).
2. Rough adjustment of "Vg2" and "Focus".
3. Rough adjustment of "Geometry".
4. Allow the set to warm up.
5. Precise adjustment of "Vg2" and "Focus".
6. Precise adjustment of "Geometry".
7. "Colour" alignments.
8. "PIP" alignments (if present).
9. Software alignments (like "Cut-Off", "Cathode Drive", "Peak White", etc).

8.2 Hardware Alignments

Notes:
- The Service Alignment Mode (SAM) is described in the "Service Modes, Error Codes and Fault Finding" section.
- All changes to menu items and alignments are stored automatically.
- Use the cursor-, menu-, and OK-buttons of the remote control (RC) transmitter for navigation.



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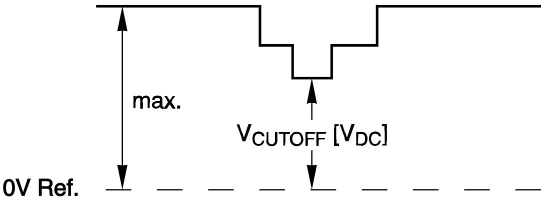
080503

Figure 8-1 Top view LSP

8.2.1 Vg2 Adjustment

In the frame-blanking period of the R, G, and B signals applied to the CRT, the HOP video processor inserts a measuring pulse with different DC levels. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.
1. Use the MENU key to enter the "user" menu, select "Picture", and set "Brightness" and "Contrast" to minimum.
2. Enter SAM by pressing the following key sequence on the remote control transmitter: **062596** directly followed by **OSD [i+]** (do not allow the display to time out between entries while keying the sequence).

3. Connect the RF output of a pattern generator to the antenna input. Input a "black" picture (blank screen on CRT without any OSD info) test pattern.
4. Set the oscilloscope to 20 V/div and the time base to 20 us/div. Use external triggering on the vertical pulse (**caution**: use a trigger point on the "**cold**" side!)
5. Ground the scope on the CRT panel ("**cold**" side) and connect a 10:1 probe to one of the cathodes of the picture tube socket (see circuit diagram F1).
6. Measure the cut-off pulse during first full line after the frame blanking. You will see two pulses; one is the cut-off pulse and the other is the white drive pulse. Choose the one with the lowest value; this is the cut-off pulse.
7. Select the cathode with the highest V_dc value for the alignment. Adjust the V_cut-off of this gun with the SCREEN (lower) potentiometer on the LOT to the correct DC value (tolerance is +/- 3 V_dc):
   - 28 inch= 160 V.
   - 32 inch= 170 V.
   - 36 inch= 170 V.
8. Reset "Contrast" to "75" and "Brightness" to "39" ("34" for 28 inch sets).



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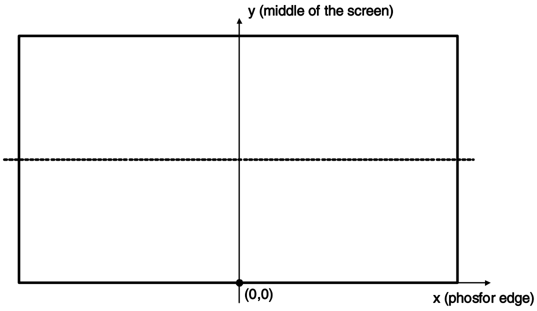
131000

Figure 8-2 Waveform Vg2 alignment

8.2.2 Focus alignment

Notes:
- Use an external video pattern generator to input a "circle with crosshatch" test pattern to the set.
- Choose "Natural" picture mode with the "Smart Picture" button on the remote control transmitter.
- Use the MENU key to enter the User menu, select "Picture", and set both "Contrast" and "Brightness" to "0".
- LOT outline:
  - Focus 1 (F1) = Static alignment (black wire).
  - Focus 2 (F2) = Dynamic alignment (red wire).

Align the focus by means of the two "Focus" potmeters on the LOT, until the horizontal and vertical lines at the positions mentioned in the following table are of minimum width, without introducing a visible haze. First, adjust the DYNAMIC focus and then the STATIC focus. Repeat if necessary to achieve the best result.



CL 36532008_126.eps
080503

Figure 8-3 Screen positions for focus alignment

Table 8-2 Focus alignment positions

CRT size	Static Focus		Dynamic Focus	
	X [cm]	Y [cm]	X [cm]	Y [cm]
28 inch RF WS (PDC MkII)	25	16	0	29
32 inch RF WS (EMEC)	30	18	0	33
36 inch RF WS (EMEC)	35	21	0	39

8.2.3 40.4 MHz Neighbour-channel Sound Trap Alignment (s)

1. Tune to a checkerboard test pattern (system PAL B/G with a carrier frequency of 475.25 MHz).
2. Connect an oscilloscope to pin 19 (CVBS out) of the SCART1 connection and trigger line frequent.
3. Align the coil L5103 (diagram B2) completely downwards (see figure "SSP top view").
4. Align the coil upwards until under- and overshoot arise at the black/white and white/black transitions in the video signal (see figure "Waveform sound trap alignment").
5. Align the coil downwards again, until above mentioned under- and overshoot just disappears.

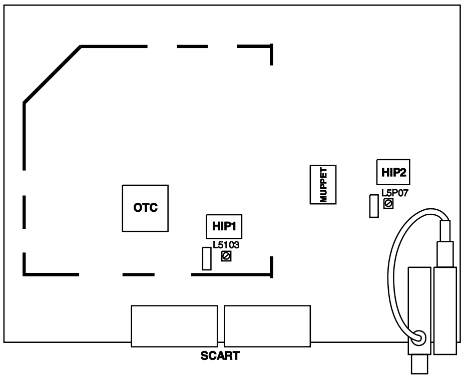


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Figure 8-4 SSP top view

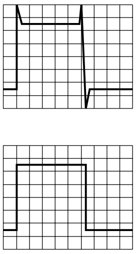

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Figure 8-5 Waveform sound trap alignment

When the set is equipped with a DW/PIP circuitry, the same alignment must be performed on this part:

1. Tune the PIP/DW tuner to a checkerboard test pattern (system PAL B/G with a carrier frequency of 475.25 MHz). See to it, that the main tuner is tuned to another channel.
2. Connect an oscilloscope to pin 19 (CVBS out, WYSIWYR) of the SCART2 connection and trigger line frequent.
3. Align the coil L5P07 (diagram B15A) completely downwards (see figure "SSP top view").
4. Align the coil upwards until under- and overshoot arise at the black/white and white/black transitions in the video signal (see figure "Waveform sound trap alignment").
5. Align the coil downwards again, until above mentioned under- and overshoot just disappears.

8.2.4 Wireless Receiver Alignments

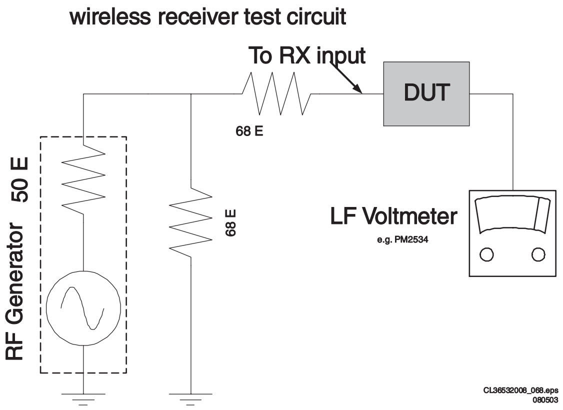
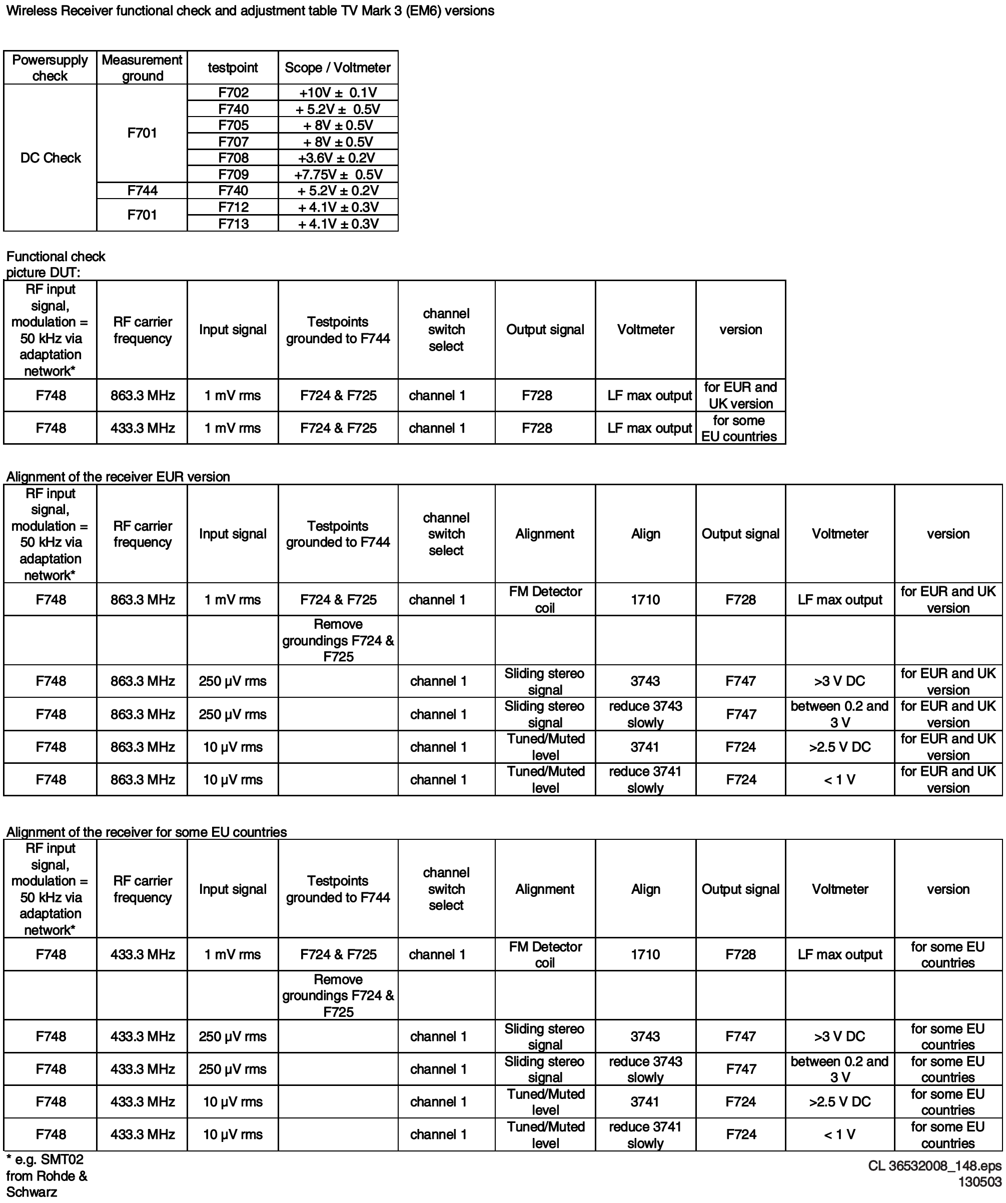


Figure 8-6 Wireless receiver test circuit



Wireless Receiver functional check and adjustment table TV Mark 3 (EM6) versions

Powersupply check	Measurement ground	testpoint	Scope / Voltmeter
DC Check	F701	F702	+10V ± 0.1V
		F740	+ 5.2V ± 0.5V
		F705	+ 8V ± 0.5V
		F707	+ 8V ± 0.5V
		F708	+3.6V ± 0.2V
		F709	+7.75V ± 0.5V
	F744	F740	+ 5.2V ± 0.2V
	F701	F712	+ 4.1V ± 0.3V
		F713	+ 4.1V ± 0.3V

Functional check picture DUT:

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	F724 & F725	channel 1	F728	LF max output	for EUR and UK version
F748	433.3 MHz	1 mV rms	F724 & F725	channel 1	F728	LF max output	for some EU countries

Alignment of the receiver EUR version

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for EUR and UK version
			Remove groundings F724 & F725						
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for EUR and UK version
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for EUR and UK version

Alignment of the receiver for some EU countries

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	433.3 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for some EU countries
			Remove groundings F724 & F725						
F748	433.3 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for some EU countries
F748	433.3 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for some EU countries
F748	433.3 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for some EU countries
F748	433.3 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for some EU countries

* e.g. SMT02 from Rohde & Schwarz

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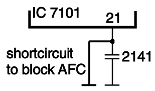
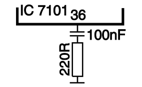
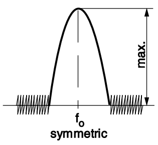
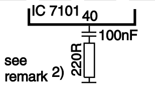
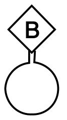
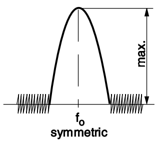
Figure 8-7 Functional check and alignments table

8.2.5 FM Radio Module Alignments

TUNER ADJUSTMENT TABLE (**ECO6 Cenelec** FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	D		5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)		5111	5	
				5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0mV ±2mV
AM RF [3]						
MW	1494kHz		1494kHz	2106	5	
	558kHz		558kHz	5102		
LW	198kHz	Δf = ±30kHz V_{RF} as low as possible	198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↕ Repeat

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Figure 8-8 Tuner adjustment table

8.3 Software Alignments

With these alignments, it is possible to align the Geometry, White Tone, and Tuner IF settings.
Put the set in the SAM (see the "Service Modes, Error Codes and Fault Finding" section). The SAM menu will now appear on the screen. Select ALIGNMENTS and go to one of the sub menus. All these alignments are explained below.

Notes:
- All changes to menu items and alignments are stored automatically, except changes to the option codes. They must be stored manually.
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values.

8.3.1 GENERAL

VG2 TEST PATTERN
In this sub menu, you can turn "on" the OSD feedback for the Vg2 alignment (see "Vg2 Adjustment" section).

ADJUST PEAK WHITE LIMITER
Fixed setting of "9".

EHT COMPENSATION
Fixed setting of "0".

SOFT CLIPPER
Fixed setting of "Pwl + 0%".

LUMA GAIN
Fixed setting of "2".

DELTA LUMA GAIN FOR AUX
Fixed setting of "0 dB".

IF AFC
Supply, via a service generator or via off-air, a TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz.
Alignment procedure:
1. During the IF AFC-parameter adjustment, one can see OSD feedback on the screen.
2. The OSD feedback can give 4 kinds of messages:
3. The first item (IN/OUT) informs you whether you are in or out of the AFC-window.
4. The second item (HIGH/LOW) informs you whether the AFC-frequency is too high or too low.

Table 8-3 OSD feedback of AFC alignment

AFC-window	AFC-frequency vs. reference
Out	High
In	High
* In *	* Low *
Out	Low

1. Adjust the IF AFC parameter until the **first** value is within the AFC window (= IN).
2. Next, adjust the IF AFC parameter until the **second** value is LOW.

IF LPRIME AFC
Same procedure as described above but with other signal source (SECAM L').

TUNER AGC
1. Connect the RF output of a video pattern generator to the antenna input.
2. From the generator, input a PAL B/G TV signal with a signal strength of approximately 2 mV and a frequency of 475.25 MHz.
3. Measure the DC voltage on pin 1 of the (main) Tuner. You can adjust this voltage by adjusting the TUNER AGC item in the SAM menu. Alignment is correct when the DC voltage is just below 3.5 V.

IF AFC TUNER 2
Use the same procedure as described above (under IF AFC) with the set switched to the DW source.

IF LPRIME AFC TUNER 2
Use the same procedure as described above (under IF LPRIME AFC) with the set switched to the DW source.

TUNER AGC TUNER 2
Use the same procedure as described above (under TUNER AGC) with the set switched to the DW source. Measure on pin 1 of the DW Tuner.

BLEND INTENSITY
Use this alignment when you replace the microcontroller or the HOP. It aligns the level of transparency of the menu-picture blended into the main-picture.
Position the "Brightness", "Contrast", and "Colour" setting in the middle position (in the customer "Picture" menu).
1. Apply a signal with a 100 % white video pattern (white raster).
2. Connect an oscilloscope to pin 8 of connector 1298 of the CRT panel and measure the Red output level.
3. Align the BLEND INTENSITY parameter so that the blended signal is 65 % of the black-white amplitude. This will be about 1.3 V (blended signal) versus 2 V (full white signal).
4. The parameter can be adjusted from 0 to 31.

8.3.2 DRIVE (Colour Alignments)

Note: Switch off all (available) colour-influencing features (set the TV in ECO-mode).

Cut-Off Adjustment
1. Set, via the user menu, the "Contrast" to "100".
2. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE - TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
3. Select CATHODE and enter the value "15" (for all picture tubes).
4. Set the RED, GREEN and BLUE values to "32".
5. Set RED BL OFFSET to default value "7".
6. Set GREEN BL OFFSET to default value "7".
7. Set, via the user menu, the "Brightness" to a value between 3.0 and 5.0 Nit (rough setting).
8. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE and set COLOR TEMPERATURE to NORMAL.
9. Adjust the RED BL OFFSET and GREEN BL OFFSET parameters to achieve the right NORMAL colour-temperature, according to the values in table "White levels".

Table 8-4 White levels

CRT	Analyz-erreadings	Cool (10200 K)	Normal (8700 K)	Warm (6500 K)
28 inch	X	280	289	313
	Y	287	299	329
32/36 inch	X	275	283	308
	Y	287	299	329

White Tone Adjustment: NORMAL

1. Set, via the user menu, the "Contrast" to "100".
2. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE - TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
3. Set COLOR TEMPERATURE to NORMAL.
4. Pre-adjust the GREEN parameter with the value from the "Luminance Adjustment".
5. Adjust the RED and BLUE parameters to achieve the right colour temperature according to the values in table "White levels".

Note: The WHITE TONE adjustments for the colour temperatures COOL and WARM have to be done at the end of the colour alignments, otherwise the correct light output (luminance adjustment) is not taken into account.

Luminance Adjustment

1. Set, via the user menu, the "Contrast" to "100".
2. Set, via the user menu, the "Sharpness " to "0".
3. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE - TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
4. Set COLOR TEMPERATURE to NORMAL.
5. Adjust the RED, GREEN, and BLUE parameters **equally** to achieve the right light output, according to the values in table "Luminance levels".

Table 8-5 Luminance levels

CRT size	Light output (cd/m2)
28 inch RF WS (PDC Mk II)	450
32 inch RF WS (EMEC)	395
36 inch RF WS (EMEC)	345

White Tone Adjustment: COOL and WARM

1. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE - TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
2. Select a COLOUR TEMPERATURE (e.g. COOL or WARM).
3. Adjust the RED and BLUE parameters to achieve the right colour-temperature, according to the values in table "White levels".

Mathematical values (next paragraph) can be used for COOL and WARM, but it is recommended to align them.

Adjustment Method Without Colour Analyser

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).

1. Set, via the user menu, the "Contrast" to "100".
2. Go to SAM, select ALIGNMENTS - GENERAL - DRIVE - CATHODE, and enter the value "15" (for all picture tubes).
3. RED BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
4. GREEN BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
5. Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
6. Set the RED, GREEN and BLUE default values according to the values in the "Tint settings" table.

Table 8-6 Tint settings

	Cool	Normal	Warm
R	36	37	40
G	30	30	30
B	37	31	18

8.3.3 LUM. DEL. (Luminance Delay)

With this alignment, you place the luminance information exactly on the chrominance information (brightness is pushed onto the colour). Use a colour bar / grey scale pattern as test signal.

- **LUM. DELAY PAL BG:** Apply a PAL BG colour bar / grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "9".
- **LUM. DELAY PAL I:** Apply a PAL I colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "9".
- **LUM. DELAY SECAM:** Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "11".
- **LUM. DELAY BYPASS:** apply a NTSC colour bar/ greyscale pattern as a test signal. Adjust this value until the transients of the colour and black and white part of the test area are at the same position. Default value is "10".

8.3.4 GEO-NOR

Note: For all geometry alignments, use an **external** pattern generator with a crosshatch pattern.

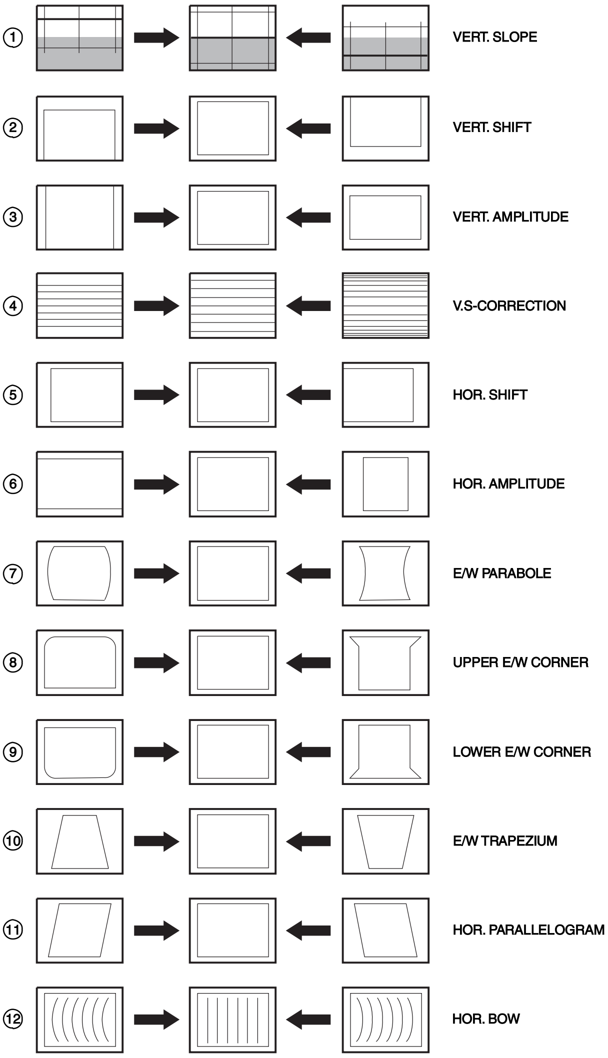

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Figure 8-9 Geometry Alignments

"Geo-Nor" stands for Normal Geometry, and is aligned in Pixel Plus mode (at 75 Hz).

Service tip: When the set is equipped with a rotation coil, use this menu item to check its correct alignment. If alignment is not correct, go to the user menu, choose SETUP, GENERAL, and TILT ADJUST. With the use of a crosshatch test pattern, align it to achieve a correct horizontal picture.

V. SLOPE

Aligns the zero crossing of the frame deflection to the mechanical middle of the picture tube.

1. First set the start conditions for 16:9 sets: V. S-CORRECTION value on "16" for the 28 inch, "18" for the 32 inch, or "20" for the 36 inch sets.
2. Align V. SLOPE (during alignment, the lower half of the picture is blanked) so that the middle line of the test pattern is matched with the edge of the pattern transient in the middle of the picture.
3. Repeat the alignment if necessary.

V. SHIFT AND V. AMPLITUDE (vertical alignment)

Aligns the vertical centre and height of the picture.

1. Use V. AMPLITUDE to align the vertical amplitude so that the entire test pattern is visible.
2. Set V. SHIFT to a value of 32.
3. Connect a voltmeter (V_dc) between R3642 and "hot" ground.
4. Adjust the DC voltage to 0 with potmeter R3642 (see figure "Top view LSP").
5. Use V. SHIFT again to align the test pattern roughly vertically in the middle of the screen.
6. Repeat the alignment if necessary.

V. S-CORRECTION

Aligns for equal size squares on the top, middle, and bottom of the picture tube.

- Align V. S-CORRECTION so that the squares at the top (or bottom) of the picture are the same height as the squares in the middle of the picture.

H. SHIFT AND H. AMPLITUDE (horizontal alignment)

1. Use H. AMPLITUDE to align the horizontal amplitude so that the entire test pattern is visible.
2. Use H. SHIFT to align the picture horizontally in the middle.
3. Repeat the H. AMPLITUDE alignment if necessary.

Note: If the horizontal linearity in wide-screen mode is out of tolerance, add a "DC-shift correction" panel (3104 328 06230) to connector 1419 of the DAF-panel [diagram I]. On the DC-shift panel, cut diode **6433** for correction to the right or diode **6432** for correction to the left.
Caution: Be sure to switch the set "off" first. Never plug in "not aligned" DC-shift module in a working TV-set!

EAST/WEST ALIGNMENT

1. Use EAST/WEST PARABOLA to align the vertical lines until they are straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners of the screen until they are straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners of the screen until they are straight.
4. Use EAST/WEST TRAPEZIUM to align for a rectangular picture.
5. Use HORIZONTAL BOW to correct the E/W parabola so that it is symmetrical.
6. Use HORIZONTAL PARALLELOGRAM to align for straight vertical lines if necessary.

Repeat steps 1 to 6 if necessary.

8.3.5 GEO-4:3

"Geo-4:3" stands for 4:3 geometry alignment in 16:9 sets and is aligned in Pixel Plus mode (at 75 Hz).

1. Use EAST/WEST PARABOLA to align the vertical lines until they are straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners of the screen until they are straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners of the screen until they are straight.

8.3.6 GEO-SW

"Geo-SW" stands for Super Wide geometry alignment in 16:9 sets and is aligned in Pixel Plus (at 75 Hz).

You only need to set the following values (if the normal geometry alignment has been performed correctly):
1. V. S-CORRECTION, enter the value of the normal geometry alignment.

2. H. AMPLITUDE, enter the value of the normal geometry alignment subtracted by 1.
3. EAST/WEST PARABOLA, enter the value of the normal geometry alignment.

8.3.7 GEO-100Hz

"Geo-100Hz" stands for 100 Hz alignment in 16:9 sets and is aligned in Digital Scan mode (at 100 Hz).

- Align the picture height to the correct amplitude requirements.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

Notes:

- After changing the option(s), save them with the STORE command.
- The new option setting is only active after the TV is switched "off" and "on" again with the Mains switch (the EAROM is then read again).

8.4.2 SERVICE OPTIONS

Select this sub menu to set the initialisation codes (options) of the set via text menus.

Table 8-7 Option overview

Menu-item	Subjects	Options	Description
Chassis/Region	Chassis	EMGS 2001	"Service" name= EM3
		EMGS 2002	"Service" name= EM5
		EMGS TOP 2003	"Service" name= EM6
	Region	AP NTSC	Only for AP
		US	Only for US
Dual screen	PIP/Dual Screen	Yes	Feature present.
		No	Feature not present.
	Text/EPG	Yes	Feature present.
		No	Feature not present.
	DS/PIP Tuner	Yes	Only selectable if Dual Screen option is "on"
		No	Feature not present.
Teletext	Flash RAM	Yes	Feature present.
		No	Feature not present.
	NexTView	None	Feature not present.
		Textguide only	Feature present, but only as text guide.
		Nextview 2c3	Feature present, for countries that support this.
Picture Tube	CRT Type	4 by 3	4:3 picture tube.
		16 by 9	16:9 picture tube.
	Picture Rotation	Yes	Frame rotation circuitry present.
		No	Frame rotation circuitry not present.
	CRT size	28 / 32 / 36 29 / 34 / 38	CRT size (in inches).MEC= Panasonic, II= Mark 2
	Anti Moiré filter	Yes	Feature present.
		No	Feature not present.
Video repro	Featurebox type	1050i/1250i	HD input
		Eagle	Eagle present (Pixel Plus).
	Lightsensor	Yes	Feature present.
		No	Feature not present.
	2D Combfilter	Yes	Feature present.
		No	Feature not present.
	Picture improvement	Yes	LTP (TOPIC) present.
		No	LTP (TOPIC) not present.
	Auto Scavem	Yes	Feature present.
		No	Feature not present.
	Signalling bits	Yes	For 16:9 sets
		No	For 4:3 sets

Menu-item	Subjects	Options	Description
Audio Repro	Dolby	None	Set without Dolby.
		Pro Logic	Set with Dolby ProLogic.
		Virtual	Sets with Virtual Dolby
	Rear speakers	Speakerless	Virtual Dolby (without rear speakers).
		Cordless	Wireless active surroundbox present.
	Subwoofer present	Yes	Feature present.
		No	Feature not present.
	Acoustic system	None, FL9-DAS, FL11, FL12, PV02, FL13, Soft Designline, Tech Designline.	
	AVL	On	Automatic Volume Limiter available in user menu.
		Off	Automatic Volume Limiter available in user menu.
Source Selection	AV3 2fH (2002)	Yes	Not selectable yet
		No	Feature not present.
	AV4 2fH (2002)	Yes	Not selectable yet
		No	Feature not present.
	EXT3 2fH (2003)	Yes	Feature present.
		No	Feature not present.
	EXT4 2fH (2003)	Yes	Not selectable for this chassis
		No	Feature not present.
Miscellaneous	Home Cinema	Yes	Set with Home Cinema Link (EU only)
		No	Set without Home Cinema Link
	Integrated RC	Yes	Feature present.
		No	Feature not present.
	Tuner type	UV1316	Set with Philips tuner.
		TEDE9	Set with Alps tuner.
	Integrated Radio	Yes	Feature present.
		No	Feature not present.
	P50 DVD menu line	Yes	Feature present (only in sets with Home Cinema).
		No	Feature not present.
Option no.	Group 1		Group 1 option code overview (see CRT sticker).
	Group 2		Group 2 option code overview (see CRT sticker).

8.4.3 OPT. NO. (Option numbers)

Select this SERVICE OPTIONS sub menu, to set all options at once (expressed in two long strings of numbers).

An option number (or "option byte") represents a number of different options. When you change these numbers directly, you can set all options very quickly. All options are controlled via eight option numbers.
When the EAROM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on the CRT sticker inside the TV set.

Example: The CRT sticker gives the following option numbers:
- 04187 08270 49936 00513
- 04118 00001 00001 00326

The first line (group 1) indicates options 1 to 4, the second line (group 2) options 5 to 8 (see tables below).
Every 5-digit number represents 16 bits (so the maximum number will be 65536 if all options are set).
When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.

Service tip: An easy way to check the option numbers is:
1. Convert the decimal option number (as given on the CRT sticker) to a binary number (e.g. by means of the 'scientific' calculator that comes with MS Windows™). E.g. OB4= 00513 (dec)= 000000100000001 (bin)
2. Use this binary number to check against the bits as mentioned in the tables below. This means in above-mentioned sample, that Bit 0 en Bit 9 are "1" (means "set"), and that the rest is "0". So, actually this means that the options "PIP/Aux Tuner" (Bit 0) and "Integrated Hard disk" (Bit 9) are set for this particular model.

Table 8-8 Option bytes Group 1

OB	Bit	Option name	Settings (in decimal values) for EM6E chassis		Option number
1	0	Featurebox	0= None (n.a.)	2= Prozonic (n.a.) 3= Eagle 4= Falconic (n.a.) 5= Falconic+ (1050i/1250i)	Sum OB1 (decimal)
	1				
	2				
	3	2D Comb Filter	0= Off	8= On	
	4	Auto-Scavem	0= Off	16= On	
	5	n.a. *	0		
	6	Light Sensor	0= Off	64= On	
	7	Luma Trans. Proc.	0= Off (fixed)	128= On (for none-Eagle sets)	
	8	n.a. *	0		
	9	n.a. *	0		
	10	n.a. *	0		
	11	n.a. *	0		
	12	WSS	0= Off (US/LA/AP-N)	4096= On (EU/AP-P)	
	13	3D Comb Filter	0= Off (EU/AP-P)	8192= On	
	14	Pixel Plus	0= Off	16384= On (fixed)	
	15	n.a. *	0		
2	0	n.a. *	0		Sum OB2 (decimal)
	1	Dolby ProLogic	0= Off	2= On	
	2	Virtual Rear Spkrs	0= Off	4= On	
	3	Cordless Rear Spkrs	0= Off (US/LA/AP-P/AP-N)	8= On	
	4	Dolby Digital	0= Off	16= On	
	5	Virtual Dolby	0= Off	32= On	
	6	Subwoofer	0= No subwoofer present	64= Subwoofer present	
	7				
	8	Chassis	0= EM6 (fixed)	256= EM5 512= EM3 3840= Others	
	9				
	10				
	11				
	12	n.a. *	0		
	13	EPG Type (EU only)	0= NexTView 2	8192= NexTView 2C3	
	14	n.a. *	0		
	15				
3	0	n.a. *	0		Sum OB3 (decimal)
	1	n.a. *	0		
	2	n.a. *	0		
	3	n.a. *	0		
	4	Dual Screen	0= Off	16= On	
	5	n.a. *	0		
	6	TXT-DS/EPG-DS	0= Off (US/LA/AP-N)	64= On	
	7	n.a. *	0		
	8	Aspect Ratio	0= 4:3	256= 16:9	
	9	Tilt	0= Off	512= On	
	10	Monitor	0= Off	1024= On (reserved for FTV)	
	11	Integrated Radio	0= Off (US/LA/AP-P/AP-N)	2048= On	
	12	Stand Alone	0= Off	4096= On (reserved for FTV)	
	13	Integrated DVD	0= Off (AP-P)	8192= On	
	14	Home Cinema	0= Off (US/LA/AP-P)	16384= On	
	15	Integrated RC (P50)	0= Off (US/LA/AP-P)	32768= On	

OB	Bit	Option name	Settings (in decimal values) for EM6E chassis		Option number
4	0	PIP/Aux. Tuner	0= Off	1= On	Sum OB4 (decimal)
	1	n.a. *	0		
	2	China IF	0= Off (EU/US/LA/AP-N)	4= On	
	3	Tuner	0= Philips	8= Alps	
	4	n.a. *	0		
	5	n.a. *	0		
	6	n.a. *	0		
	7	n.a. *	0		
	8	Digital Module (MILO)	0= Off (US/LA/AP-P/AP-N)	256= On	
	9	Integrated Harddisk	0= Off (AP-P)	512= On	
	10	n.a. *	0		
	11	n.a. *	0		
	12	Anti Aging	0= Off	4096= On (reserved for FTV)	
	13	DVD-door lock	0= Off (AP-P)	8192= On	
	14	n.a. *	0		
	15	n.a. *	0		

Notes: - Bits that are not used have a fixed value of "0", and are not mentioned in above overview.
AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.

Table 8-9 Option bytes Group 2

OB	Bit	Option name	Settings (in decimal values) for EM6E chassis		Option Number
5	0	n.a. *	0		Sum OB5 (decimal)
	1	Auto Store Mode	0= None (US/LA/AP-N)	2= PDC/VPS 4= TXT Page 6= PDC/VPS/TXT Page	
	2				
	3	Korean Stereo	0= Off	8= On	
	4	Picture Mute	0= Off	16= On	
	5	n.a. *	0		
	6	Virgin Mode	0= Off	64= On	
	7	n.a. *	0		
	8	n.a. *	0		
	9	n.a. *	0		
	10	n.a. *	0		
	11	n.a. *	0		
	12	TXT Preference	0= TOP	4096= FLOF	
	13	n.a. *	0		
	14	n.a. *	0		
	15	n.a. *	0		
6	0	P50 DVD menu-line	0= Off	1= On	Sum OB6 (decimal)
	1	n.a. *	0		
	2	n.a. *	0		
	3	n.a. *	0		
	4	Region	0= EU	16= AP PAL-multi 32= AP NTSC 48= US 64= LATAM 80= Australia	
	5				
	6				
	7				
	8	n.a. *	0		
	9	n.a. *	0		
	10	n.a. *	0		
	11	n.a. *	0		
	12	n.a. *	0		
	13	n.a. *	0		
	14	n.a. *	0		
	15	n.a. *	0		

OB	Bit	Option name	Settings (in decimal values) for EM6E chassis		Option Number
7	0	EXT4 1fH (EU)	0= Off	1= On	Sum OB7 (decimal)
	1	EXT 2fH 1 (EU)	0= Off	2= On (used as EXT5 in EM6)	
	2	EXT 2fH 2 (EU)	0= Off (fixed)	4= On	
	3	EXT VGA (EU)	0= Off (fixed)	8= On	
	4	EXT DVI (EU)	0= Off (fixed)	16= On	
	5	EXT3 (EU)	0= Off	32= On	
	6	n.a. *	0		
	7	n.a. *	0		
	8	n.a. *	0		
	9	AV 2fH 1 (non-EU)	0= Off	512= On (used as AV4 in EM6)	
	10	AV 2fH 2 (non-EU)	0= Off	1024= On (used as AV5 in EM6)	
	11	AV VGA (non-EU)	0= Off (fixed)	2048= On	
	12	AV DVI (non-EU)	0= Off (fixed)	4096= On	
	13	n.a. *	0		
	14	n.a. *	0		
	15	n.a. *	0		
8	0	Cabinet	0= FL6 (n.a.)	1= FL7 (n.a.) 2= FL8 (n.a.) 3= FL9 DAS 4= FL9 Monitor (n.a.) 5= FL10 (n.a.) 6= FL11 7= FL12 8= FL14 (n.a.) 9= PV02 10= FL13 11= Soft Design Line 12= Tech Design Line	Sum OB8 (decimal)
	1				
	2				
	3				
	4	n.a. *	0		
	5	n.a. *	0		
	6	AVL	0= Off	64= On	
	7	n.a. *	0		
	8	Picture tube size	0= 28 inch	256= 32 inch 512= 36 inch 768= 29 inch 1024= 34 inch 1280= 38 inch 1536= 32 inch MEC 1792= 28 inch Mk2 2048= 36 inch FP 3840= Other	
	9				
	10				
	11				
	12	Anti Moiré	0= Off	4096= On	
	13	n.a. *	0		
	14	n.a. *	0		
	15	n.a. *	0		

Notes: - Bits that are not used have a fixed value of "0", and are not mentioned in above overview.
AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.

8.4.4 DEALER OPTIONS

Table 8-10 Dealer options overview

Menu name	Subjects	Options	Physically in set
Personal Options	Picture Mute	Yes	Picture mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up once with language selection menu after mains switch on for the first time (virgin mode)
		No	TV does not starts up once with language selection menu after mains switch on for the first time (virgin mode)
	Auto Store Mode	None	Autostore mode disabled (not in installation menu)
		PDC-VPS	Autostore mode via ATS (PDC/VPS) enabled
		TXT page	Autostore mode via ACI enabled
		PDC-VPS-TXT	Autostore mode via ACI or ATS enabled
	TXT Preference	TOP	Preference to TOP Teletext
		FLOF	Preference to FLOF Teletext
	DVD Door Lock(only for DVD sets)	Yes	Lock the DVD module, disc cannot be ejected
		No	Unlock the DVD module, disc can be ejected
	Flex TV Demo(only for HDD sets)	On	Enable dealer demo for Flex TV (HDD) sets
		Off	Disable dealer demo for Flex TV (HDD) sets

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

1. Introduction
2. Block diagram
3. Power supply
4. Control
5. Video
6. Audio
7. Wireless surround
8. Tuner board
9. LCD board
10. Interface board
11. Software upgrading
12. Abbreviation list
13. IC Data Sheets

Notes:

- Only **new** circuits (compared to the EM5) are described. For the other circuit descriptions, see the manual of the EM5E. This manual is available in different languages:
  - 3122 785 12560 = English.
  - 3122 785 12571 = German.
  - 3122 785 12581 = French.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

9.1.1 New Features

The new EM6E-TDL chassis has the following extra features (compared to the EM6E):

- Next step "Active Control" with: two new bars ("Motion" and "Tint Control" bar), four split demos, etc.
- Two tuner PIP/ FDS (Picture In Picture / Full Dual Screen).
- Same Large Signal Panel (LSP), but able to handle more power and prepared for future extensions like DVD, Digital TV (DTV), and Hard Disc Drive (HDD).
- New Small Signal Panel (SSP), which is however based on the existing EM5 architecture: not longer a shielded module via 80-pins SIMM connector as in EM5, but a full panel with integrated the shielded module. This results in better EMC / crosstalk behaviour and fewer cables.
- Dolby ProLogic 2 (only in top models). New algorithm provides stereo surround sound from any stereo source. Further, a higher bandwidth for all channels, so better channel separation and better sound quality.
- Eco Digital Dolby with new flat surround speakers (NXT technology). Multi-channel sound integrated on SSB via new Micronas chipset.
- Downloadable main software (via ComPair).
- Scavem on TXT.
- Flex TV (hard disc pack). This will allow time shift recording, instant recording, or programmed recording (not in all models).
- Built in RDS radio with motorised LCD display.
- Built in DVD player (not in all models).

9.1.2 Large Signal Panel

The chassis has a full sized Large Signal Panel / Small Signal Panel combination (LSP/SSP). The SSP is connected to the LSP by means of two IDE connectors and flex cables.
The main functionalities of the LSP are supply, deflection, and sound amplification.
The main functionalities of the SSP are tuner input, I/O, interface provisions (four SCART's), TXT/control, video / audio decoding, Feature Box, and sync / geometry control.

The LSP (single sided) is built up very conventional, with hardly any surface mounted components on the copper side. It has a large "hot" part, including both deflection coils.

9.1.3 Small Signal Panel

The SSP is a high tech module (four layer, 2 sides reflow technology, full SMC) with very high component density and partial shielding (FBX) for EMC-reasons. Despite this, it is designed in such a way, that repair on component level is possible. To achieve this, attention was paid to:

- Accessibility of the test points. The SSP has good accessible service positions.
- Clearance around surface mounted ICs (for replacing).
- Detailed diagnostics and fault finding is possible via ComPair.
- Software upgrading is possible via ComPair.

Further features of the SSP are:

- The PIP functionality is integrated on the SSP.
- It is equipped with a "multi-media" connector for so-called "bolt on" modules like DVD and HDD.
- The 3D Comb filter functionality (for USA) is integrated on the SSP.
- The rear I/O connections (like SCART and cinch) are integrated on the SSP, even as the (2) tuner(s) and wireless transmitter jack.

On below photographs you can see where all the functional cells are located on the SSP:

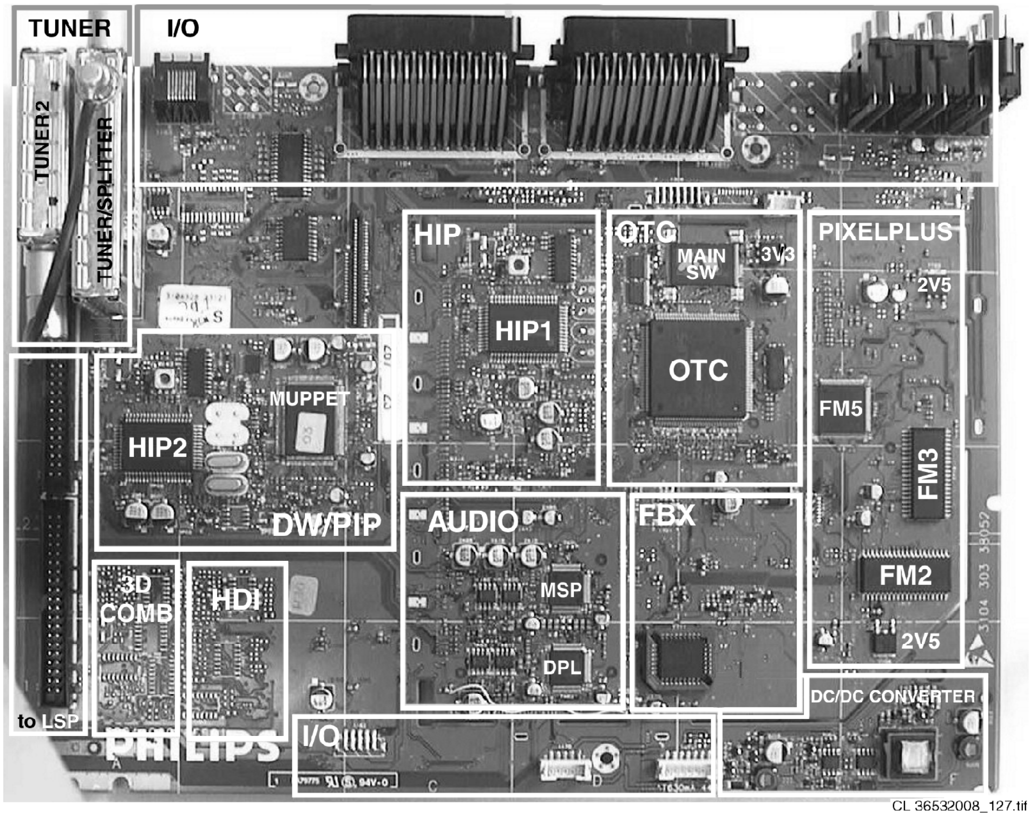
TUNER
I/O
TUNER 2
TUNER/SPLITTER
HIP
OTC
MAIN SW
3V3
PIXELPLUS
2V5
HIP1
OTC
MUPPET
HIP2
FM5
FM3
DW/PIP
AUDIO
FBX
MSP
FM2
3D COMB
HDI
DPL
2V5
to LSP
DC/DC CONVERTER
I/O
PHILIPS

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Figure 9-1 SSP top view

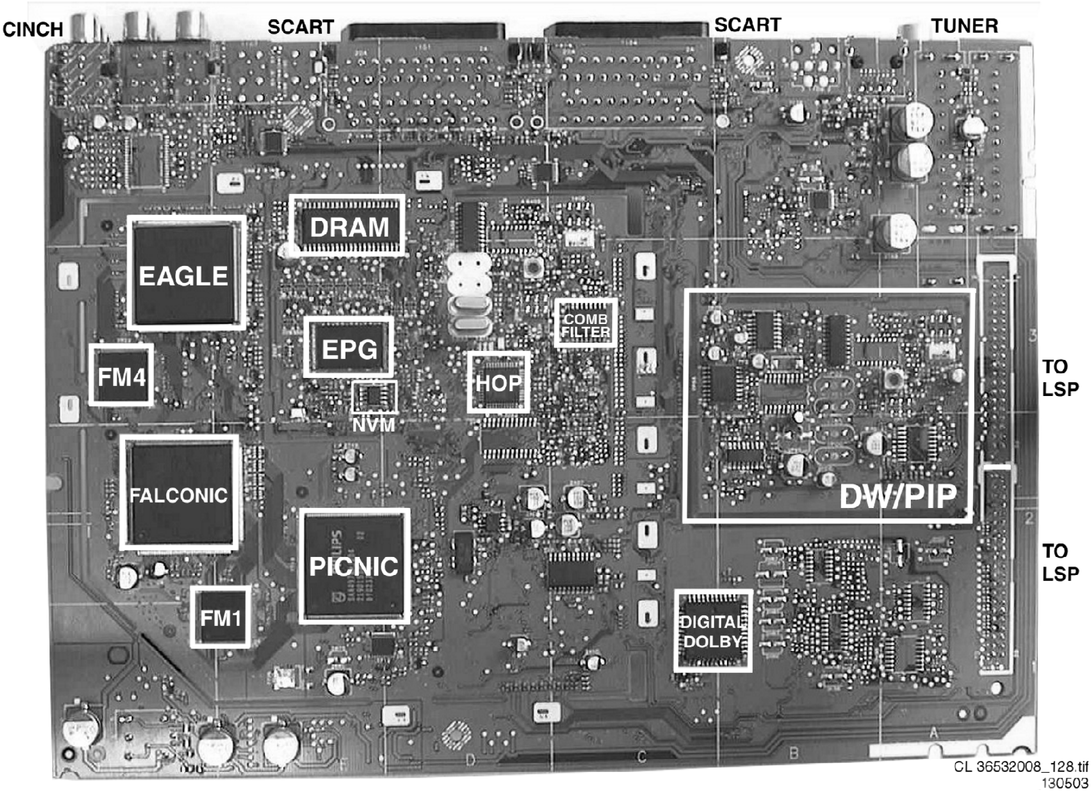
CINCH
SCART
SCART
TUNER
DRAM
EAGLE
COMB FILTER
EPG
FM4
HOP
NVM
TO LSP
FALCONIC
DW/PIP
TO LSP
PICNIC
FM1
DIGITAL DOLBY

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Figure 9-2 SSP bottom view

9.2 Block Diagram

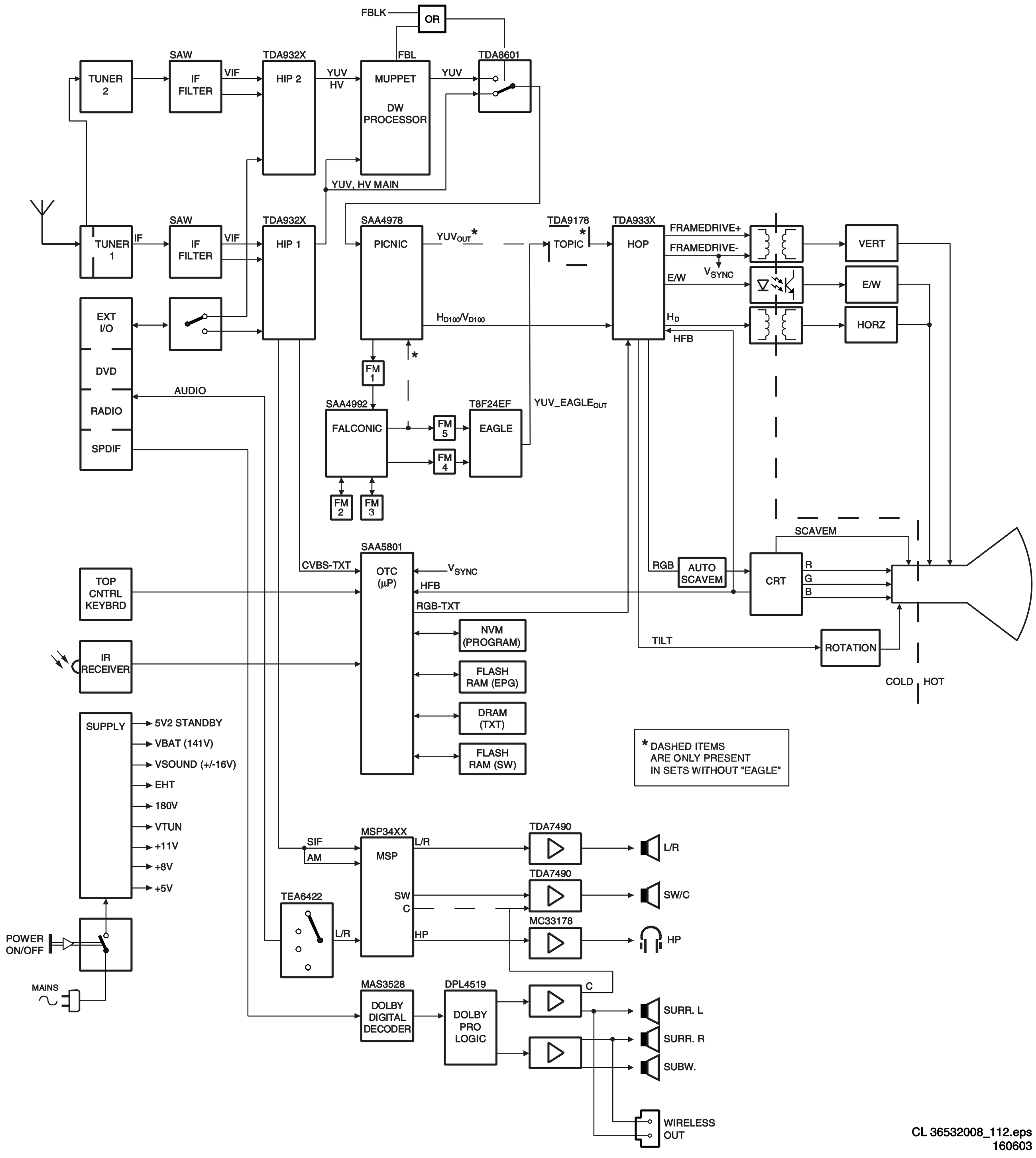
FBLK
OR
FBL
TDA8601
SAW
TDA932X
TUNER 2
IF FILTER
VIF
HIP 2
YUV HV
MUPPET
DW PROCESSOR
YUV
YUV, HV MAIN
SAW
TDA932X
SAA4978
TDA9178
TDA933X
TUNER 1
IF
IF FILTER
VIF
HIP 1
PICNIC
YUV_OUT *
TOPIC
HOP
FRAMEDRIVE+
FRAMEDRIVE-
V_SYNC
E/W
VERT
E/W
HORZ
EXT I/O
DVD
RADIO
SPDIF
AUDIO
H_D100/V_D100
H_D
HFB
FM 1
*
SAA4992
FALCONIC
FM 5
FM 4
T8F24EF
EAGLE
YUV_EAGLE_OUT
FM 2
FM 3
SCAVEM
SAA5801
CVBS-TXT
OTC (µP)
V_SYNC
HFB
RGB-TXT
RGB
AUTO SCAVEM
CRT
R
G
B
TOP CNTRL KEYBRD
IR RECEIVER
NVM (PROGRAM)
FLASH RAM (EPG)
DRAM (TXT)
FLASH RAM (SW)
TILT
ROTATION
COLD
HOT
* DASHED ITEMS ARE ONLY PRESENT IN SETS WITHOUT "EAGLE"
SUPPLY
5V2 STANDBY
VBAT (141V)
VSOUND (+/-16V)
EHT
180V
VTUN
+11V
+8V
+5V
POWER ON/OFF
MAINS
SIF
AM
MSP34XX
MSP
L/R
SW
C
HP
TDA7490
TDA7490
MC33178
L/R
SW/C
HP
TEA6422
L/R
MAS3528
DOLBY DIGITAL DECODER
DPL4519
DOLBY PRO LOGIC
C
SURR. L
SURR. R
SUBW.
WIRELESS OUT

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Figure 9-3 Block diagram

The Tuner/splitter is a PLL tuner and delivers the IF-signal, via audio and video SAW-filters, to the HIP1 (High-end Input Processor). The HIP1 has the following functions:

- IF modulation.
- Video source select and record select.
- Colour decoder.
- Synchronization.

For DW/PIP the set is equipped with a DW-processor.

The following video input/output connections (with audio connections) are available:

- Front: interfaces CVBS and Y/C.
- EXT1: interfaces CVBS, RGB- and YUV-input (1fH)
- EXT2: interfaces CVBS and Y/C (meant for VCR- or DVD+RW connection).
- EXT3: interfaces CVBS.
- EXT4: interfaces CVBS.
- Monitor out: interfaces CVBS out.

The HIP1 delivers YUV and sync signals to the PICNIC (in the Feature Box). This IC takes care of:

- Analogue to Digital conversion and vice versa.
- 100 Hz processing
- Interlaced to progressive scan conversion.
- Panorama mode.
- Noise reduction.
- Dynamic contrast.

After the PICNIC, the YUV-signals are fed to the FALCONIC for "Natural Motion", followed by the Eagle for "Pixel Plus" enhancement (if present). The processed YUV signals (from Eagle or PICNIC) are, together with the sync-signals from the PICNIC, then fed to the HOP (High-end Output Processor). This IC handles the video control and geometry part. The RGB-signals for CC/OSD (from the uP) are also inserted via the HOP. The video part delivers the RGB signals to the CRT-panel and the geometry part delivers the H-drive, V-drive, E/W-drive, and TILT-drive signals.

Both deflection circuits are "hot" and located on the LSP. The HOP drives them. To make a galvanic separation, the Line Drive is driven via transformer 5410 and the Frame Drive via transformer 5621.The horizontal output stage generates some supply voltages and the EHT voltage, focus voltage and Vg2 voltage.

The RGB amplifiers on the CRT-panel are supplied with 200 V from the LOT.
The Auto-SCAVEM circuit modulates transitions of the Luminance (Y) signal on the horizontal deflection current, giving a sharper picture.

The sound part is built around the MSP44x2 (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Dolby decoding is done by two separate ICs in cooperation with the MSP. Amplification is done via a "class D" integrated power amplifier IC, the TDA7490.
The set is also provided with a "wireless out" connector, for wireless surround applications.

The microprocessor, called OTC (OSD, TXT/CC and Control) takes care of the analogue TXT input processing and output processing. The OTC, ROM, and RAM are supplied with 3.3 V, which is derived from the +5V2.
The NVM (Non Volatile Memory) is used to store the settings; the Flash-RAM contains the set software.

There is a separate Standby Supply, in order to reduce the Standby power consumption. During Standby, the Main Supply is switched "off" (via TS7529).
A relay (1550) is used to switch the Degaussing circuit. It is switched "on" after set start-up and switched "off" by the microprocessor after 12 s.
The Main Supply, a SMPS based on the "boost converter" principle, generates the 141 V (V_BAT) and the +/- 16 V for the audio part.
For the power supply of the FBX and DW/PIP circuits, a separate DC/DC converter is used, generating 3.3 V.

9.3 Power Supply

The power supply has a number of main functions:

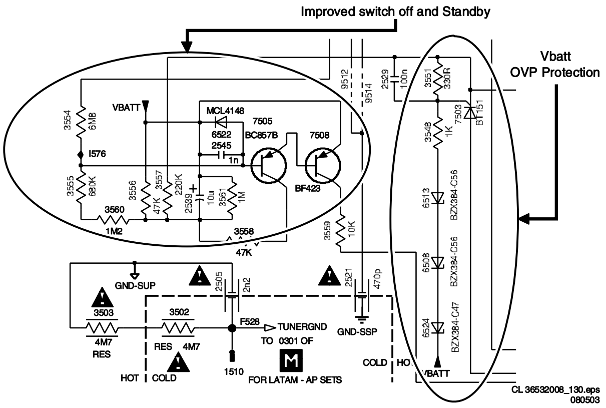
- **Mains harmonic filter.** The mains harmonic filter has two functions: to prevent high frequency signals (harmonics) from being transferred into the mains and to protect the set from lightning damage.
- **Degaussing picture tube.** As soon as the set is switched "on" via the ON/OFF switch, the 5V2 is present. When the DEGAUSSING signal from the processor (OTC) is "low", transistor 7528 will conduct, and relay 1550 is activated. Initially a considerable current will flow, via PTC 3516, through the degaussing coil. The PTC will heat up, resistance will rise, and the current will decay rapidly. The OTC makes the DEGAUSSING signal "high" after 12 s, which will switch "off" the relay.
- **Standby supply:**
  - Fly-back supply principle.
  - Outputs: 5V2, 8V6, 12V, and 30V.
- **Main supply:**
  - Buck-boost supply.
  - 140V (not mains isolated).
  - +16V and -16V for audio.
  - Self-oscillating power supply (SOPS).
- **DC/DC converter.** The function of this part is 12 V to 3.3 V conversion, to provide the supply voltage for the Feature Box and DW/PIP Muppet.

9.3.1 Standby power supply (diagram A2)

Compared to the EM5 circuit, there are the following differences in the +5V and +8V Standby power supply.

- The +5V is protected against over-voltage via D6149 and TS7140.
- If the +11V (11V_STBY line) is not present, the +5V supply line will be switched "off" via TS7141.

9.3.2 Main Supply (diagram A1)


Improved switch off and Standby

Vbatt
OVP Protection

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Figure 9-4 New main supply circuits

Compared to the EM5 circuit, there is an improvement in the "switch off" and "standby" behaviour of the main supply.
The circuit around TS7505 and TS7508 is a comparator between the V_BATT and the +380 V rectified input voltage. If V_BATT is present, the voltage divider R3554, R3555, R3560, R3556 is referenced to the +V_BATT, meaning that TS7505 and TS7508 are blocked.
At the moment the set is switched to "standby", the V_BATT will decrease. Now the reference of the voltage divider is connected to ground via R3557, and also R3556 is connected to ground because V_BATT is switched "off". In this condition, TS7505 and TS7508 will conduct. A current will flow via TS7508 / R3559 to the SUP-ENABLE line (which is negative), and via TS7529 more current will flow in the opto-coupler for "standby".
Thyristor TS7503 is a protection against "V_BATT over-voltage". If V_BATT exceeds the values of zener diodes D6524 + D6508 + D6513 (47+56+56= 159 V), then the gate of TS7503 will be positive and the device will conduct. As a result, the rectified voltage after the bridge rectifier will be short-circuited to ground and the fuse will be blown.

Some **important** notes on V_BATT:

- This voltage is **not** isolated from the main supply ("hot").
- It is alignment free.

9.3.3 DC/DC Converter (diagram B12)

A DC/DC converter has the following advantages:

- The DC/DC converter is directly on the SSB near the circuits that needs to be powered with the 3.3 V.
- Circuits in the FBX and the DW part need some high current by low voltage, so, there is no risk to have power dips or voltage loss in connections between the LSP and the SSB panel.

The circuit used is a so-called "synchronous buck converter". Some characteristics:

- Input parameters: 12.5 V / 330 mA.
- Output parameters: 3.42 V ± 0.15 V / 1.2 A.
- Switching frequency: approx. 60 kHz.
- Efficiency: approx. 90%.
- Inhibit (+5V) and fast turn-off (3V3_FAULT) control inputs.

Block diagram

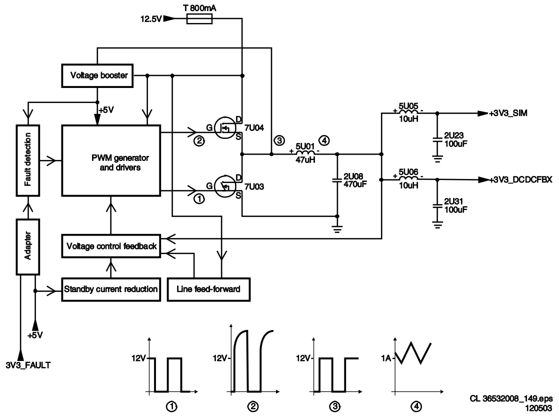

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Figure 9-5 Block diagram DC/DC converter.

Advantage to use a "synchronous buck converter" instead of a "classical buck converter" is a better efficiency (about 90%). The difference between the two is that in a synchronous buck converter the "low -side" diode is replaced by a MOSFET (item 7U03). This, because the resultant voltage drop across the MOSFET is smaller than the forward voltage drop of the diode. This second MOSFET conducts current during the "off" times of the first MOSFET (at the input side). The upper MOSFET conducts to transfers energy from the input to the inductor and load, while the lower MOSFET conducts to circulate the inductor current. The synchronous PWM control block regulates the output voltage by modulating the conduction intervals of the upper and lower MOSFETs.

PWM Generator and Drivers

This circuit is build around transistors 7U01, 7U02, 7U08, 7U09, and the associated components. MOSFETs T7U04 and T7U03 are the switching transistors, they are conducting alternatively.

- Time sequence 1: T7U04 is conducting; energy is stored in coil 5U01. The current is flowing from the +11V power supply source.
- Time sequence 2: T7U04 is blocked; energy is stored in coil 5U01.
- Time sequence 3: T7U03 is conducting, and the current circuit is now closed via T7U03, Coil 5U01, C2U08, and the load. So the energy stored in the coil during time sequence T1 is consumed during sequence T3. The signal on the gate T7U03 is 180 degrees turned compared with the signal on the gate T7U04.

The principle of operation of the PWM generators and drivers is an astable circuit, whose frequency is mainly given by the values of capacitor 2U32 and resistor 3U03. Capacitors 2U05, 2U27, and 2U28 form a capacitive voltage divider to limit the negative peak voltage on the base of transistor 7U09 at about 3 V. The same role have the capacitors 2U09 and 2U12 for the transistor 7U08.
The resistor 3U14 and the capacitor 2U30 introduce a small dead time between switching "off" of transistor 7U03 and switching "on" of transistor 7U04 to prevent cross-conduction through them.
The capacitors 2U07, 2U16, and 2U18 speed-up the switching of the astable circuit. This circuit is blocked in "off" state (7U02 and 7U08 saturated and 7U01 and 7U09 blocked) when the transistor 7U11 is conducting.
This happens when either +5V has a low value (below 2 V), the boost voltage drops below its minimum value, or the 3V3_FAULT signal is low (below 1 V) for more than 20 ...30 ms.

Voltage Booster

This circuit is build around capacitors 2U03, 2U04, 2U05, resistor 3U51, and diodes 6U03 and 6U04.
It generates the boost voltage (approx. +20 V) for supplying the "high-side" driver transistor for the power MOS-FET 7U04. The voltage is generated only during normal operation of the converter; therefore, any drop in its value means an internal fault condition, which is sensed by the internal protection circuit.
The A.C. component of the voltage on the source of transistor 7U04 is rectified by diodes 6U04 and 6U03 and added to the input voltage, resulting into the boost voltage. The resistor 3U51 limits the peak current through the rectifier diodes to about 300 mA.

Voltage Control Feedback

This circuit keeps the output voltage constant when the input voltage and/or the output current vary. It is build around transistors T7U06-A, T7U06-B, T7U05, diode D6U07, and associated components.
A 6.9 V reference voltage is provided by zener diode D6U07 (via T7U15). Transistors T7U05 and T7U06A are comparators. E.g. if the voltage on the base of T7U06-B increases, T7U06-B and T7U08 will conduct more, and via T7U08 the conducting time of T7U04 will be reduced, resulting in a decreasing output voltage.

Linefeed Forward

This circuit (resistor 3U46) improves the line regulation factor.

Stand-by Current Reduction

This circuit is build around transistors 7U14 and 7U15. It cuts the quiescent current through the reference zener diode 6U07 in stand-by mode.

Adapter

This circuit is necessary for having proper start-up/shut-down operation of the converter at various shapes of the +5V voltage.

Fault detection

In "on" mode, transistors 7U12, 7U10, 7U07, and 7U13 are conducting and the transistor 7U11 is blocked.
In protection mode, transistors 7U11, 7U07, and 7U13 are conducting (provided that the “+5V” voltage is higher than 4.5 V) and transistors 7U10 and 7U12 are blocked.
During start-up, the protections are bypassed for a short time (tenths of ms) by capacitors 2U22 and 2U20.

+20V Detection

This circuit detects the boost voltage, and is build around transistor 7U12, diode 6U10, and associated components. If the boost voltage is lower than 15 V, transistors 7U12 and 7U10 are blocked, 7U11 is conducting, so via diodes 6U08 and 6U09 the PWM and Driver circuit is switched "off".
It is also the case when the input voltage “+11V” is less than about 10 V (the under-voltage lock-out function).

+3V3 Detection
If the +3.3V and +5V are present, C2U26 is charged. Transistor T7U10 conducts, T7U11 is blocked, and the PWM and Driver circuit is working.
If there is a voltage drop on the +3.3V, the voltage on C2U25 cannot be maintained, resulting that T7U10 will block and the PWM and driver circuit will be switched "off".

+5V Detection
The same situations if the +5V drops: T7U07 and T7U13 will block, the reference voltage on R3U41 will drop, and a switch "off" of the PWM and Driver circuit is the result.
Diode 6U06 is foreseen to clamp the output voltage to 5 V in case of fault conditions (like 7U04 short-circuited D-S). The fuse 1U01 will open in such conditions.

Role of Other Components

- The capacitors 2U06 and 2U10 are filtering the ripple current generated by the commutation of power MOS-FET 7U04 (about 700 mA_rms, while the capacitor 2U08 is filtering the output voltage.
- Coil 5U02 and capacitor 2U15 prevent that noise generated by the switching will disturb other circuits supplied from +11V.
- Coils 5U05 and 5U06 and capacitors 2U23 and 2U31 are supplementary filtering of the output voltage for the two load circuits (PIP and Feature Box).
- Beads 5U03 and 5U04 damp oscillations during the switching of the power MOS-FETs.
- Components 2U01, 2U02, and 6U02 are not present (the voltage “+3V3-ILINK” is not used).

Service Tips

- When a power MOS-FET is found defective, replace the other power MOS-FET, the fuse 1U01, and the diode 6U06 as well.
- When a driver transistor (7U01, 7U02, 7U08, or 7U09) is found defective, replace the complementary transistor as well
(**example:** replace also 7U08 if 7U02 is defective).
- For a normal operation of the converter, it is important to check the switching frequency, the value of the boost voltage, and the amplitude of the gate voltage of transistor 7U04 (it should be close to the boost voltage).

9.4 Control

9.4.1 "Switch On" Behaviour

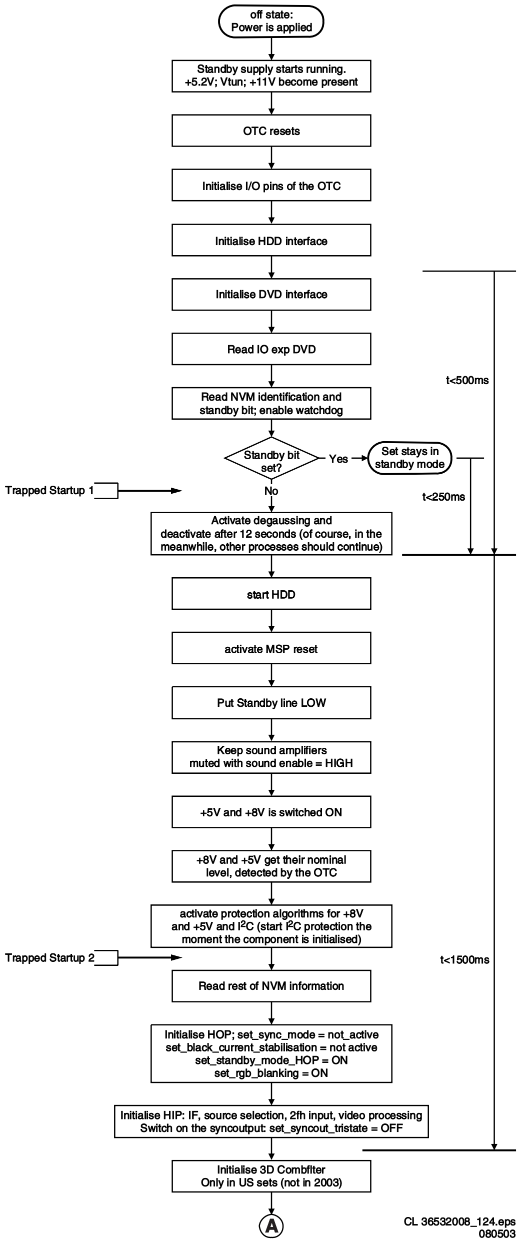
off state:
Power is applied
Standby supply starts running.
+5.2V; Vtun; +11V become present
OTC resets
Initialise I/O pins of the OTC
Initialise HDD interface
Initialise DVD interface
Read IO exp DVD
Read NVM identification and standby bit; enable watchdog
Standby bit set?
Yes
Set stays in standby mode
No
Trapped Startup 1
t<500ms
t<250ms
Activate degaussing and deactivate after 12 seconds (of course, in the meanwhile, other processes should continue)
start HDD
activate MSP reset
Put Standby line LOW
Keep sound amplifiers muted with sound enable = HIGH
+5V and +8V is switched ON
+8V and +5V get their nominal level, detected by the OTC
activate protection algorithms for +8V and +5V and I2C (start I2C protection the moment the component is initialised)
Trapped Startup 2
t<1500ms
Read rest of NVM information
Initialise HOP; set_sync_mode = not_active
set_black_current_stabilisation = not active
set_standby_mode_HOP = ON
set_rgb_blanking = ON
Initialise HIP: IF, source selection, 2fh input, video processing
Switch on the syncoutput: set_syncout_tristate = OFF
Initialise 3D Combfilter
Only in US sets (not in 2003)
A
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Figure 9-6 Switch "on" flow chart (part 1)

Start up sequence:

1. After the power is applied, the "Standby supply" starts oscillating, generating the +5V2, V_tun, and +11V. A reset (POR) is generated and the OTC is awakened.
2. Next step is the check whether the set needs to be in "Standby" mode or not. Therefore, the NVM content is read and the Standby-bit is checked. If the set is to stay in Standby, there is no further action.
3. If the set switches "on", first the degaussing will be activated (for 12 seconds).
4. Meanwhile the MSP is reset, and the Standby line is pulled low, leading to a full semi standby mode (+5V2 and +8V switched on). Mute sound amplifiers.
5. The OTC waits until the +5V and the +8V are fully present (checking the AD-input of the OTC does this). The +5V, +8V, and I2C protection-algorithms are activated.

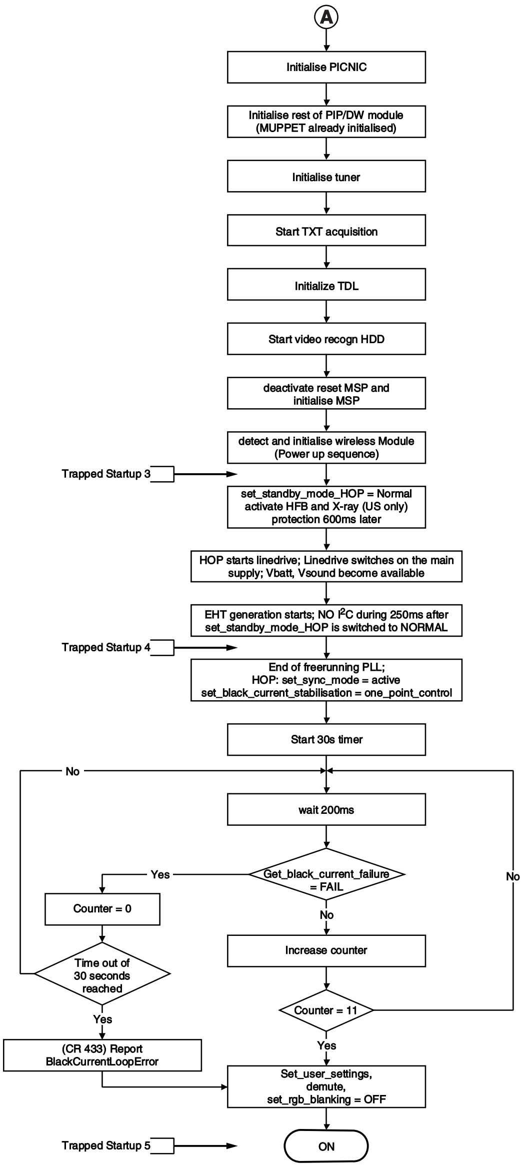
A
Initialise PICNIC
Initialise rest of PIP/DW module (MUPPET already initialised)
Initialise tuner
Start TXT acquisition
Initialize TDL
Start video recogn HDD
deactivate reset MSP and initialise MSP
detect and initialise wireless Module (Power up sequence)
Trapped Startup 3
set_standby_mode_HOP = Normal activate HFB and X-ray (US only) protection 600ms later
HOP starts linedrive; Linedrive switches on the main supply; Vbatt, Vsound become available
EHT generation starts; NO I2C during 250ms after set_standby_mode_HOP is switched to NORMAL
Trapped Startup 4
End of freerunning PLL; HOP: set_sync_mode = active set_black_current_stabilisation = one_point_control
Start 30s timer
No
wait 200ms
Yes
Get_black_current_failure = FAIL
No
Counter = 0
No
Increase counter
Time out of 30 seconds reached
Counter = 11
Yes
Yes
(CR 433) Report BlackCurrentLoopError
Set_user_settings, demute, set_rgb_blanking = OFF
Trapped Startup 5
ON

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Figure 9-7 Switch "on" flow chart (part 2)

1. Initialise HOP, HIP, 3D Comb, PICNIC, PIP/DW, Tuner, and MSP.
2. Activate HFB and X-ray (USA only) protections.
3. The HOP is instructed via the I2C-bus to start the line drive.
4. Via the SUP-ENABLE signal, the main supply is activated. The Line Deflection circuitry is supplied now with the V_BAT, and the EHT generation can start. Also, V_SOUND becomes available.
5. During start-up of the deflection, I2C traffic must be disabled for 250 ms to avoid data corruption. If flashes or spikes are generated during EHT start-up, I2C data could be disturbed or corrupted.
6. After deflection is powered up completely, all the other protection-algorithms are activated.
7. The black current stabilisation loop in the HOP is switched on. Some extra checking is done to ensure that the loops are completely stabilised.
8. The OTC sets all the necessary parameters for a correct sound and image and unblanks the picture.

9.5 Video

9.5.1 Tuner & IF

Note: The "Tuner & IF" parts for the main picture and the DW/PIP picture are comparable.

The tuner/splitter is I2C controlled, and is capable of receiving off-air and cable channels.
Also, the tuning is done via I2C. The reference voltage on pin 9 is 33 V. This voltage (+33V) is derived from the secondary side of the standby supply (V_TUN), via D6110 and R3116//R3115 and a 33 V zener diode. The OTC, together with the HIP, controls the tuning procedure. There is also automatic switching for the different video systems.

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. The type of this filter depends on the received standard(s). There are two SAW filters: one for filtering picture-IF and a second one for sound-IF.

The output of the tuner is controlled via an IF-amplifier with AGC-control. This is a voltage feedback from pin 62 of the HIP to pin 1 of the tuner. AGC take-over point is adjusted via the service alignment mode "Tuner AGC". If there is too much noise in the picture, it is possible that the AGC setting is wrong. It is also possible that the AGC-setting is misaligned, if the picture deforms with a perfect signal. Then the IF-circuit is amplifying too much.

The video IF-signal is fed to pins 2/3 of the PLL-controlled IF-demodulator. The voltage-controlled oscillator of the PLL is adjusted via the service menu "IF AFC". If the alignment is correct, the displayed frequency in the installation menu is the same as the applied frequency from a generator. The external coil L5408 (or L5P08 for the DW/PIP circuitry), connected between pins 7/8, is used as reference.
The demodulated IF-video signal is available at pin 10 of the HIP. In this video signal, there is a rest of the sound carrier, which is filtered out by the sound trap 1407 (or 1P09 for DW/PIP).
Then the signal is fed again to the HIP on pin 12, where the group delay is corrected, dependent on the standard that is received.
The CVBS-signal is available at pin 13 for further processing in the set. Via TS7322, the signal is supplied to EXT1 (SCART pin 19, CVBS out) and again back into the HIP (pin 14) to the source/record selection.

To achieve Quasi Split Sound (QSS), the IF-signal is fed to the HIP on pin 63/64 via SAW-filter 1409 (or 1P04 for DW/PIP). The FM-modulated signal is available on pin 5 and is fed to the audio demodulator (item 7A02).

9.5.2 Video: DW/PIP (diagram B15)

Introduction
The Double Window (DW) panel provides the option for the viewer to see two (or more) pictures / programs on the displayed area of a TV screen. The displayed pictures can be in PIP mode or DW mode. The viewer can also select the size and position of the "second" picture.

New DW/PIP features with respect to 2002:
- Making use of HIP instead of BOCMA.
- Provisions to use 2D Comb filter for the sub-picture.
- New modes by making use of FBX (e.g. Multi-PIP 12, Multi-PIP 9, Multi-PIP 8 surround).
- Photo finish in correct order by making use of FBX.

IF and Video section
The "IF and video" processing in the DW module is performed by a HIP IC, same as for the main picture.

Processing
The MUPPET IC (SAB9081, item 7PA6) is a multi-standard PIP controller, which can be used in Double Window or PIP applications.
The main picture YUV is fed to pins 98, 2, and 100, while the sub picture YUV is fed to pins 83, 79, and 81.
These signals are mainly used during the DW mode. In PIP mode, the signals are inserted into the main picture with reduced size.

Inside the MUPPET, the conversion to the digital environment is done with ADCs. Processing and storage (1 MB DRAM) of the video data is done entirely in the digital domain. The conversion back to the analogue domain is done by DACs. Internal clocks are generated by PLLs, which lock on to the applied horizontal and vertical syncs from the main and sub pictures. The main picture syncs are applied to pin 70 (V) and pin 94 (H) and the sub picture syncs are applied to pin 72 (V) and pin 87 (H).
For DW mode, the main picture is compressed horizontally by a factor of two and fed directly to the output. After compression, a horizontal expansion of two is possible for the main picture. The sub picture is also compressed horizontally by a factor of two but stored in memory before it is fed to the outputs.

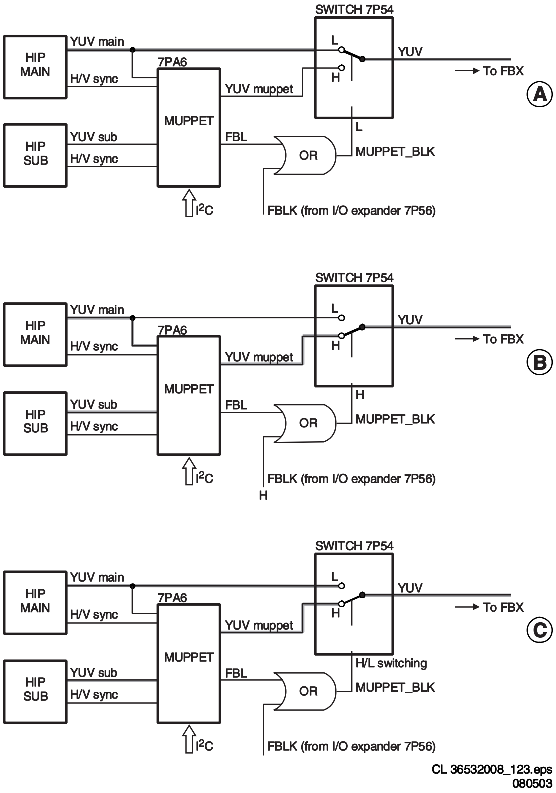
SWITCH 7P54
HIP MAIN
YUV main
H/V sync
7PA6
MUPPET
YUV muppet
L
H
YUV
To FBX
A
HIP SUB
YUV sub
H/V sync
FBL
OR
L
MUPPET_BLK
I²C
FBLK (from I/O expander 7P56)
B
H
C
H/L switching
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Figure 9-8 DW/PIP operation

[A] In normal mode (no DW or PIP), the YUV_MAIN signal is connected to switch 7P54, which is directly connected to the FBX (the switch is not activated).

[B] In case of DW, both signals, main YUV signal and sub YUV are added in de Muppet and via switch 7P54 routed to the FBX. In DW mode the switch is forced to send the signal from the Muppet (and not the main YUV). This to avoid that in squeezed mode instead of the black bars a part of the main signal should be visible.

[C] In case of PIP, the YUV_MAIN signal is connected to the switch (will be the "main" picture). Via the switch, the signal is connected to the FBX.

At the moment the PIP-info has to be written into the main picture, the switch is connected to the YUV-muppet signal (contents = YUV-sub signal). The switching is controlled by the FBL signal from pin 68 of the MUPPET, and the switching time determines the size and the place of the PIP picture.

Service Tips
- When something is wrong in the Muppet, and the FBL signal is "high" (example internal short circuit), then it is not possible to force the main path signal by software. However, you can do it manually by connecting the command line (pin 5) of switch IC7P54 to ground.
- When an error is communicated from the Muppet IC (no I2C communication), the H_sync and V_sync from main HIP must be checked (pin 94 or pin 70 of the Muppet IC). When there is no H- or V_sync, the I2C communication is interrupted.

9.6 Audio

This chassis can handle the following sound systems (depending on the model):
- Stereo.
- Virtual Dolby Surround.
- Dolby ProLogic 1 (4.1) and 2 (5.1).
- Dolby Digital (AC3).

The audio functionality is build up around the:
- MSP4450G (Multi Standard Sound Processor), in combination with the MAS3529H (Dolby Digital Decoder) and the DPL4519G (Dolby ProLogic Decoder) for full Digital Dolby.
- Or the MSP34x2 for the other executions.

The MSP IC takes care of the main FM sound decoding. It contains digital audio processing, used for the basic left/right stereo sound, such as bass, treble, balance, incredible sound and spatial. Additionally, for Digital Dolby, the MSP4450G can be "upgraded" with the MAS3529H (Dolby Digital Decoder) and the DPL4519G (Dolby ProLogic Decoder).

9.6.1 Audio: Inputs / Outputs

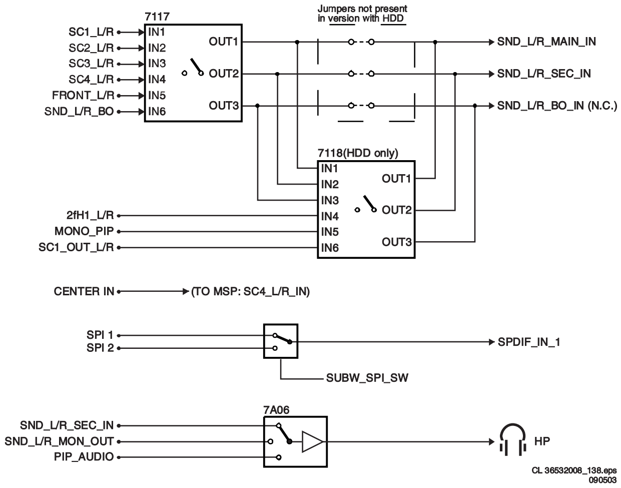
7117
SC1_L/R
SC2_L/R
SC3_L/R
SC4_L/R
FRONT_L/R
SND_L/R_BO
IN1
IN2
IN3
IN4
IN5
IN6
OUT1
OUT2
OUT3
Jumpers not present in version with HDD
SND_L/R_MAIN_IN
SND_L/R_SEC_IN
SND_L/R_BO_IN (N.C.)
7118(HDD only)
2fH1_L/R
MONO_PIP
SC1_OUT_L/R
CENTER IN
(TO MSP: SC4_L/R_IN)
SPI 1
SPI 2
SPDIF_IN_1
SUBW_SPI_SW
7A06
SND_L/R_SEC_IN
SND_L/R_MON_OUT
PIP_AUDIO
HP
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Figure 9-9 Audio input block diagram

Inputs:
- Up to four stereo audio inputs.
- Front input.
- 2 * 2fH stereo inputs (for US).
- 2 * Bolt-on inputs (HDD or DVD).
- 2 * SPDIF input + 1 * Bolt-on (BO) SPDIF input.

Outputs:
- CVBS / Decoder out.
- Record select (WYSIWYR= What You See Is What You Record).
- Headphone.

PIP audio is based on the TDA7309D (item 7A06) headphone processor as in MG-chassis.
Extra inputs are handled with the TEA6422D as in the MG-chassis.

9.6.2 Audio: IF Demodulation

At the input of the MSP, a choice can be made between two IF-signals: SIF1 and SIF2.
The selected signal is then fed to an AGC. After this, an ADC converts the IF-signal to digital.
Two demodulation channels can process this digital signal. The first one is able to handle FM and NICAM signals. The second one can handle FM and AM signals.
After the down-mix, the signal is fed, via a filter, to a discriminator. From here the AM, FM or NICAM demodulation can be performed.
Both channels contain an "automatic carrier mute" function, which automatically mutes the output of the analogue section when no carrier is detected.
After demodulation, the FM-signals are subjected to a de-emphasis operation. After that, the matrix of the stereo system is applied.

9.6.3 Audio: Processing

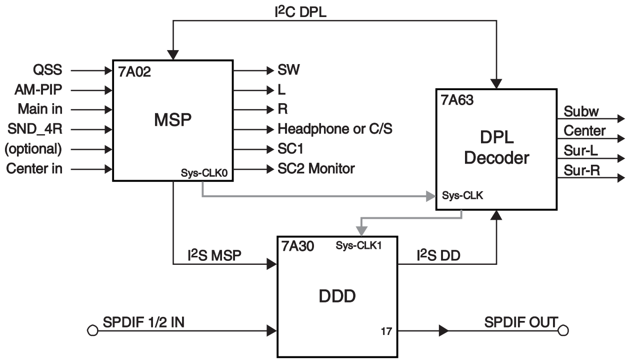

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Figure 9-10 Audio processing block diagram

The sound processing is performed completely by the MSP:
- The user performs volume control via the SOUND menu.
- Tone control in "Stereo" sets is performed via the BASS/ TREBLE control.
- Headphone control: the MSP has a separate Headphone output so separate sound control is possible.

The Micronas Dolby Digital System
The Micronas Dolby Digital system solution consists of three dedicated integrated circuits:
- The MSP 44x0G is the interface for all TV-sound and analogue input signals. It performs the TV-audio demodulation including analogue stereo, NICAM, and Wegener Panda decompression. It has four pairs of audio D/A-converters, two of them including sound control facilities, and one additional subwoofer D/A converter.
- The DPL 4519G adds the Dolby Surround Sound features and has three pairs of audio D/A-converters, two of them including sound control facilities, and one additional subwoofer D/A converter.
- The MAS 3528E performs the Dolby Digital or MPEG decoding and has additional functions that are necessary for the Dolby Digital system.

While the MSP 44x0G is a stand-alone TV-sound solution, the combination with a DPL 4519G results in a high-end TV with Dolby Pro Logic functionality. With the addition of the MAS 3528E, the TV provides full Dolby Digital/MPEG-1 capabilities.

Micronas DPL 4519G
The DPL 4519G receives its incoming data via an I2S interface. The synchronisation is performed by means of an adaptive high-quality sample rate converter.
In an application together with the Dolby Digital decoder MAS 3528E, eight channels (left, right, surround left, surround right, centre, subwoofer, Pro Logic encoded left, Pro Logic encoded right) are fed in and processed in the DPL 4519G.
Similar to the multichannel I2S input interface, the DPL is provided with an 8-channel I2S output interface, which is connected to the MSP 44x0G. Therefore, all eight channels can be routed to each output in both ICs.
The base band processing including e.g. balance, bass, treble, and loudness is performed at a fixed sample rate of 48 kHz.

Micronas MAS 3528E
The MAS 3528E receives S/PDIF or serial data streams, and decodes the Dolby Digital (AC-3), MPEG or PCM-encoded audio formats.
Due to the automatic format detection, no controller interaction is needed for the standard operation. On the other hand, the controller has full access to all vital information contained in the Dolby Digital bit stream.
The choice of different output formats, as defined by Dolby, guarantees good adaptation to various listening environments.
The hardware of the MAS 3528E consists of a high performance RISC Digital Signal Processor (DSP) and appropriate interfaces.
The MAS 3528E is driven by a single clock at a frequency of 18.432 MHz. The clock is provided from an external source (SYS-CLK1 from the DPL 4519G) to pin XTI.

9.6.4 Audio: Amplifier

The audio amplifier is an integrated "class-D" power amplifier IC, the TDA7490. It delivers an output of 2 x 15 W_rms to two full range speakers. For the higher specified sets, a subwoofer and centre speaker are easy to implement, by adding a second amplifier. This circuit is described in the EM5 manual.

9.6.5 Audio: Headphone Amplifier

The headphone amplifier is a straightforward OpAmp amplifier (ICA07-A, MC33178D). It is supplied with +11V_AUD.

9.7 Wireless Surround Loudspeaker System

9.7.1 Introduction

With the Wireless Surround Loudspeaker System, it is possible to connect rear speakers wireless with the main set. The system consists of:
- Transmitter part (TX): a transmitter board (click-on module).
- Receiver part (RX): a receiver board, an amplifier board, and a power supply part.
- Loudspeaker boxes for Left and Right rear.

The wireless system is intended for stereo sound in the range from 20 Hz to 20 kHz.
It can be used for normal L/R stereo sound or for the surround channels in Dolby systems.
The system has an analogue sound processing system (compressing - expanding) and uses synthesised tuning at

both the transmitter and receiver side. There are frequency executions available in different frequency bands:

- 433 MHz (some EU countries).
- 864 MHz (EU).
- 914 MHz (US).

In each particular frequency band, there is a choice between four different channels or frequencies.

9.7.2 System Considerations

The Wireless system uses a very high performance audio processing that allows up to 100 dB dynamic range to be transmitted over a classic analogue link, through the compressing effect at the transmitter (reducing the dynamic range by a factor of 2 in dB) and the expanding effect in the receiver (increasing the dynamic range by a factor of 2 in dB).

In addition, the system has the possibility to maintain the high S/N up to low RX field strengths by applying sliding stereo (this means reducing the stereo effect at low signal field strengths).
Pre-emphasis (at TX) / de-emphasis (at RX) technique is with15 us time constant.
Since the signal processing is analogue, there is a low latency in the system of < 15 us between input TX and output RX.
The receiver part has a power save mode that will be initiated automatically when no signal to reduce power consumption.
The system uses normal FM modulation/demodulation and also uses the Zenith stereo system. However, the frequencies used are different in this respect: the sub carrier frequency= 3 * 15.625 kHz = 46.875 kHz (chosen because interference zero-beats with the TV line freq). Consequently, the pilot frequency is 23.4375 kHz (half of sub carrier).
The transmitter amplifier has an output power of 10 mW and drives it into an internal printed antenna (the 433 MHz version uses an external antenna).

9.7.3 Transmitter

Block Diagram

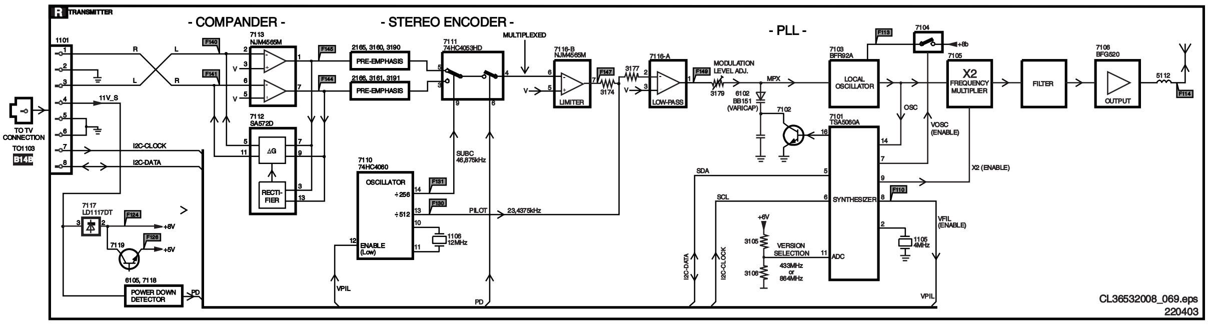

R TRANSMITTER
- COMPANDER -
- STEREO ENCODER -
- PLL -
1101
TO TV CONNECTION
TO1103
B14B
11V_S
I2C-CLOCK
I2C-DATA
R
L
F140
F141
7113
NJM4565M
V
7112
SA572D
ΔG
RECTI-FIER
F145
F144
2165, 3160, 3190
PRE-EMPHASIS
2166, 3161, 3191
PRE-EMPHASIS
7111
74HC4053HD
MULTIPLEXED
SUBC
46,875kHz
7110
74HC4060
OSCILLATOR
÷256
÷512
F131
F130
PILOT
23,4375kHz
1106
12MHz
ENABLE
(Low)
VPIL
PD
7117
LD1117DT
F124
+8V
7119
F126
+5V
6105, 7118
POWER DOWN
DETECTOR
7116-B
NJM4565M
LIMITER
F147
3177
3174
7116-A
LOW-PASS
F149
MODULATION
LEVEL ADJ.
3179
6102
BB151
(VARICAP)
MPX
7102
7103
BFR92A
LOCAL
OSCILLATOR
F113
7104
+8b
7105
X2
FREQUENCY
MULTIPLIER
OSC
VOSC
(ENABLE)
X2 (ENABLE)
FILTER
7106
BFG520
OUTPUT
5112
F114
7101
TSA5060A
SYNTHESIZER
ADC
SDA
SCL
F110
VFIL
(ENABLE)
1105
4MHz
+6V
3105
3106
VERSION
SELECTION
433MHz
or
864MHz
I2C-DATA
I2C-CLOCK
VPIL
CL36532008_069.eps
220403

Figure 9-11 Block diagram transmitter

Audio Compander

The audio compressor uses a SA572 (7112), which is intended for high-end applications. It is used together with a low noise OpAmp (7113). There is no audio input filtering ahead of the compressor. Therefore, it can only be used when the source is having no frequency components above 20 kHz, otherwise the compander's linearity will be at risk. This is realised with a digital filter on the SSP.
Graphically the operation of a "compressing and expanding" (=companding) system can be understood from following figure:

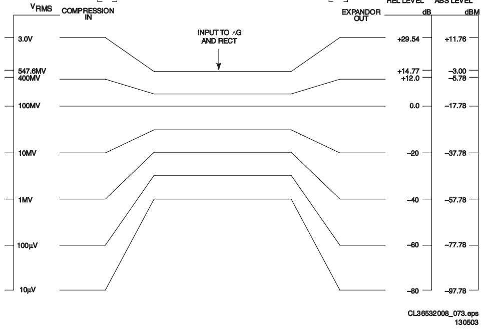


Figure 9-12 Compressing/Expanding graphics

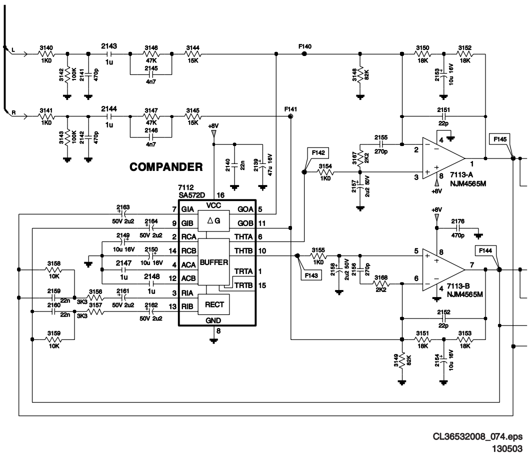

L
R
3140 1K0
3141 1K0
3142 100K
3143 100K
2141 470p
2142 470p
2143 1u
2144 1u
3146 47K
3147 47K
2145 4n7
2146 4n7
3144 15K
3145 15K
F140
F141
3148 82K
3150 18K
3152 18K
2153 10u 16V
2151 22p
COMPANDER
+8V
2140 22n
2139 47u 16V
7112
SA572D
VCC
GIA
GIB
RCA
RCB
ACA
ACB
RIA
RIB
GND
GOA
GOB
THTA
THTB
TRTA
TRTB
ΔG
BUFFER
RECT
2163 50V 2u2
2164 50V 2u2
2149 10u 16V
2150 10u 16V
2147 1u
2148 1u
3158 10K
2159 22n
2160 22n
3156 3K3
3157 3K3
2161 50V 2u2
2162 50V 2u2
3159 10K
F142
3154 1K0
3167 2K2
2157 2u2 50V
2155 270p
7113-A
NJM4565M
F145
+8V
2176 470p
F143
3155 1K0
2158 2u2 50V
2156 270p
3168 2K2
7113-B
NJM4565M
F144
2152 22p
3151 18K
3153 18K
3149 82K
2154 10u 16V
CL36532008_074.eps
130503

Figure 9-13 Companding circuit

Basically, the circuit comes down to following simple circuit:

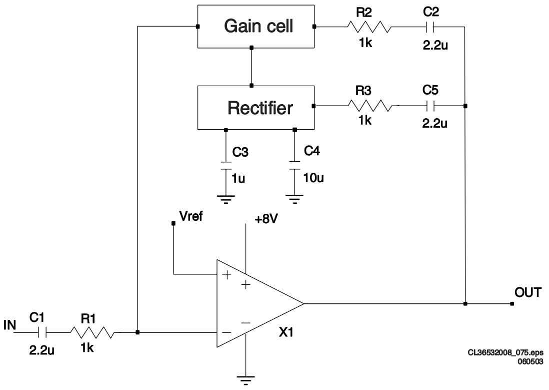

Gain cell
R2
1k
C2
2.2u
Rectifier
R3
1k
C5
2.2u
C3
1u
C4
10u
Vref
+8V
OUT
IN
C1
2.2u
R1
1k
X1
CL36532008_075.eps
060503

Figure 9-14 Basic compander configuration

The basic compander configuration is given above. From the diagram, one can understand the factor of two of companding as follows:

There is a variable gain cell (variable resistor) in the feedback loop of an OpAmp (NJM4565M) that is controlled by the rectifier cell that detects the output voltage of the OpAmp and translates it into a current send to the gain cell. The rectifier has an attack time constant (C3) and a decay time constant (C4), which is optimised to give the best auditive result.

If the input (V_in) rises with e.g. 4 times then the output can rise only 2 times. This is because the feedback resistor formed by the gain cell is decreased with a factor of two.

Remember that for an OpAmp V_out= V_in*((Rf+R1)/R1), where R1 is constant (Rf= R2+internal gain cell resistance).

The Pre-Emphasis, Stereo Encoding, and Output Filtering

The two channels that are available from the compander are now having pre-emphasis with a time constant of 12 us. Too much time constant would give problems with the voltage rising too high at maximum modulation frequency, and hence occupied bandwidth of the modulated signal. The pre-emphasis consists of a simple RC circuit. The stereo encoder 7111C is in fact just an electronic switch, which is driven by the sub carrier frequency. With this operation, the frequency spectrum at the output of the switch is as follows in the frequency domain:

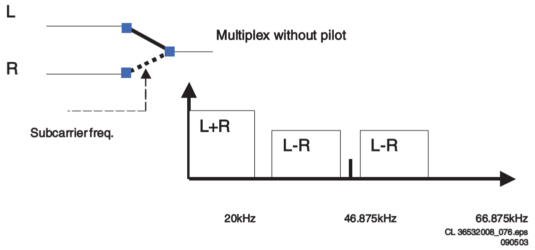
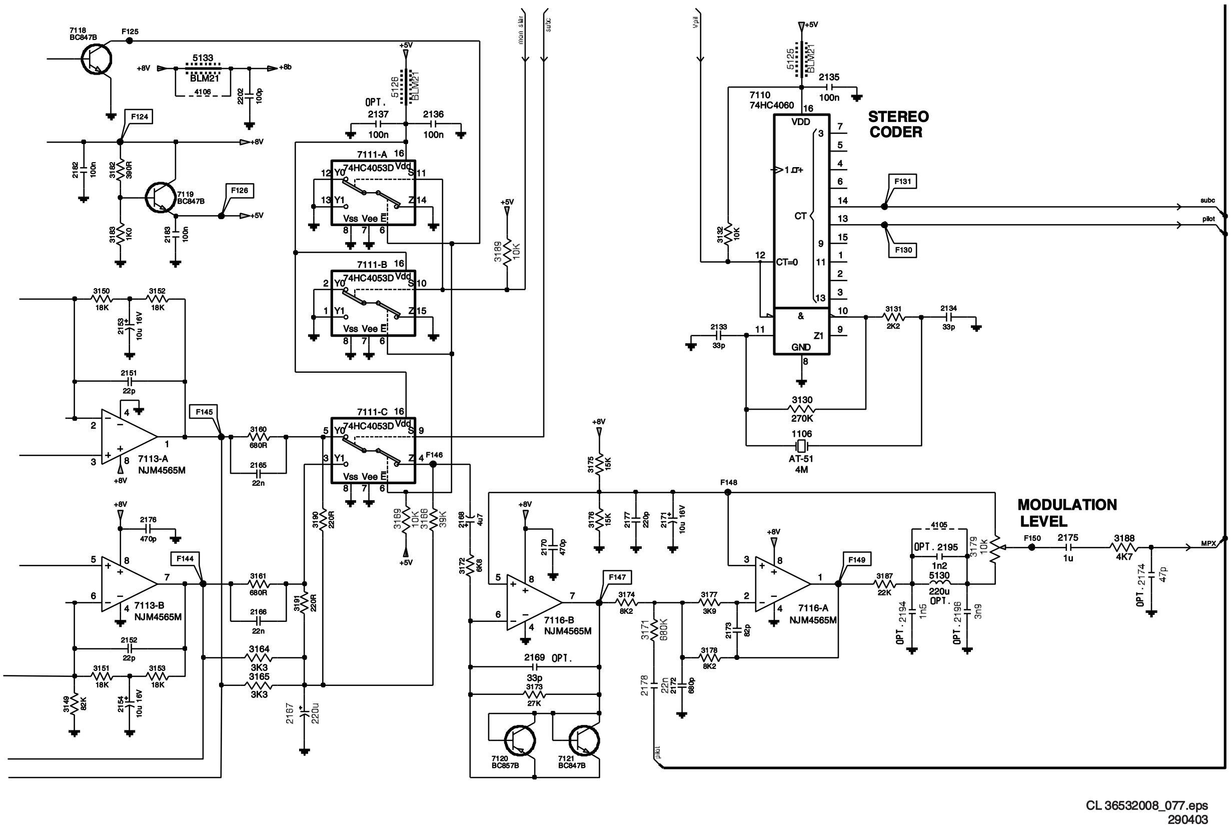

L
R
Multiplex without pilot
Subcarrier freq.
L+R
L-R
L-R
20kHz
46.875kHz
66.875kHz
CL 36532008_076.eps
090503

Figure 9-15 Stereo encoder circuitry

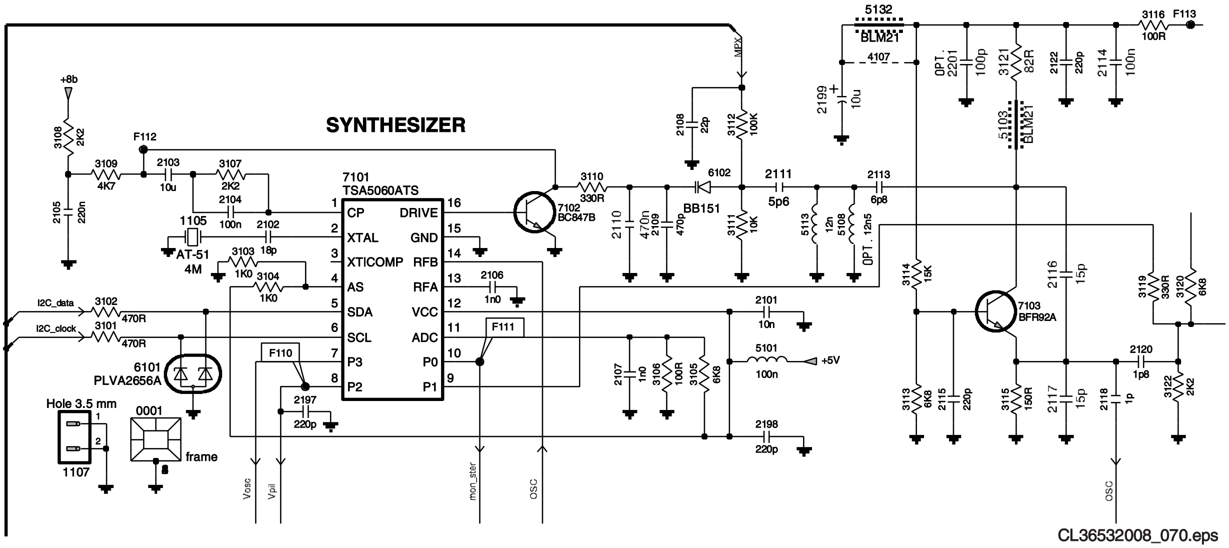

7118
BC847B
F125
5133
BLM21
+8V
+8b
4106
2202
100p
F124
+5V
OPT.
2137
100n
2136
100n
5126
BLM21
7111-A
74HC4053D
7111-B
74HC4053D
7111-C
74HC4053D
Vss Vee
2182
100n
3182
390R
7119
BC847B
F126
3183
1K0
2183
100n
3150
18K
3152
18K
2153
10u 16V
2151
22p
F145
7113-A
NJM4565M
3160
680R
2165
22n
3190
220R
3169
10K
3168
10K
3166
39K
2168
4n7
3189
10K
2176
470p
F144
7113-B
NJM4565M
3161
680R
2166
22n
3191
220R
2152
22p
3151
18K
3153
18K
3148
82K
2154
10u 16V
3164
3K3
3165
3K3
2167
220u
3172
6K8
3175
15K
3176
15K
2177
220p
2171
10u 16V
2170
470p
F147
7116-B
NJM4565M
3174
8K2
3171
680K
2169
OPT.
33p
3173
27K
7120
BC857B
7121
BC847B
2178
22n
2172
680p
F148
3177
3K9
2173
82p
3178
8K2
7116-A
NJM4565M
F149
3187
22K
OPT. 2194
1n5
4105
OPT. 2195
1n2
5130
220u
OPT.
OPT. 2198
3n9
3179
10K
MODULATION LEVEL
F150
2175
1u
3188
4K7
OPT. 2174
47p
MPX
7110
74HC4060
5125
BLM21
2135
100n
VDD
STEREO CODER
F131
F130
CT
CT=0
3132
10K
2133
33p
GND
3131
2K2
2134
33p
3130
270K
1106
AT-51
4M
subc
pilot
mon stat
subc
Vpil
pilot

CL 36532008_077.eps
290403

Figure 9-16 Stereo encoding frequency spectrum

Note: the other two switches of 7111 (respectively 7111A and 7111B) are not used.

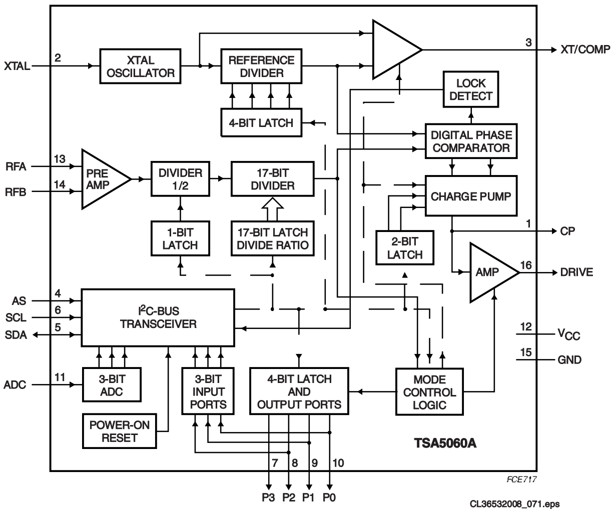
Synthesizer and Local Oscillator


SYNTHESIZER
7101
TSA5060ATS
CP
XTAL
XTICOMP
AS
SDA
SCL
P3
P2
DRIVE
GND
RFB
RFA
VCC
ADC
P0
P1
+8b
F112
3108 2K2
3109 4K7
2105 220n
2103 10u
3107 2K2
2104 100n
2102 18p
1105
AT-51 4M
3103 1K0
3104 1K0
I2C_data
I2C_clock
3102 470R
3101 470R
6101 PLVA2656A
Hole 3.5 mm
1107
0001
frame
F110
F111
2197 220p
2106 1n0
7102 BC847B
3110 330R
2110 470n
2109 470p
2108 22p
3112 100K
6102 BB151
3111 10K
2111 5p6
5113 12n
5108 OPT. 12n5
2113 6p8
2101 10n
5101 100n
+5V
2107 1n0
3106 100R
3105 6K8
2198 220p
5132 BLM21
4107
2199 10u
OPT. 2201 100p
3121 82R
5103 BLM21
2122 220p
2114 100n
3116 100R
F113
MPX
3114 15K
7103 BFR92A
2116 15p
3119 330R
3120 6K8
2120 1p8
3113 6K8
2115 220p
3115 150R
2117 15p
2118 1p
3122 2K2
Vosc
Vpil
mon_ster
OSC
OSC

CL36532008_070.eps
290403

Figure 9-17 Synthesizer and local oscillator

The internal circuitry of the synthesizer IC (TSA5060A) can be seen in figure below:


XTAL
RFA
RFB
AS
SCL
SDA
ADC
XTAL OSCILLATOR
REFERENCE DIVIDER
4-BIT LATCH
LOCK DETECT
DIGITAL PHASE COMPARATOR
CHARGE PUMP
PRE AMP
DIVIDER 1/2
17-BIT DIVIDER
1-BIT LATCH
17-BIT LATCH DIVIDE RATIO
2-BIT LATCH
AMP
I²C-BUS TRANSCEIVER
3-BIT ADC
POWER-ON RESET
3-BIT INPUT PORTS
4-BIT LATCH AND OUTPUT PORTS
MODE CONTROL LOGIC
TSA5060A
XT/COMP
CP
DRIVE
VCC
GND
P3
P2
P1
P0
2
13
14
4
6
5
11
3
1
16
12
15
7
8
9
10
FCE717

CL36532008_071.eps
010503

Figure 9-18 Block diagram TSA5060A

The TSA5060A is software controlled by the I2C bus (commands are send directly via the TV slow I2C bus).
To verify whether there is communication between the host device and the TSA5060A, one can check the supply voltage of the oscillator transistor 7103 (TP F113). This should be about 7.5 V in normal conditions when the I2C signal is interpreted by the synthesiser. If there is improper communication, the voltage remains at 0 V.
There is version recognition foreseen to discriminate between 433 or 864 MHz units. This feature will automatically load the correct frequency division words into the synthesiser at starting up and initialisation of the TV set.
The reference quartz crystal is 4 MHz, which is divided to a lower reference frequency of 25 or 50 kHz (depending on the version).
The PLL filter is passive and includes 2103, 2104, and 3107.
The transistor 7102 is part of the PLL current source, and allows connection to higher supply voltages as +5 V.

The TSA5060A has some output ports:

- Port P3 (V_osc), used to switch the local oscillator (LO).
- Port P2 (V_pil), used to switch the pilot.
- Port P1, used to switch the power amplifier (PA).

The local oscillator (LO) is a common base transistor (7103) that is oscillating at half the output frequency. The frequency is tuned by varicap 6102, until the tuning voltage is in the range of the loop filter (between 1 and 6 Vdc). If the voltage is outside this range, then possibly the division ratio is chosen outside the normal range, or some frequency dependant component around the transistor is faulty.

Multiplier and Power Amplifier

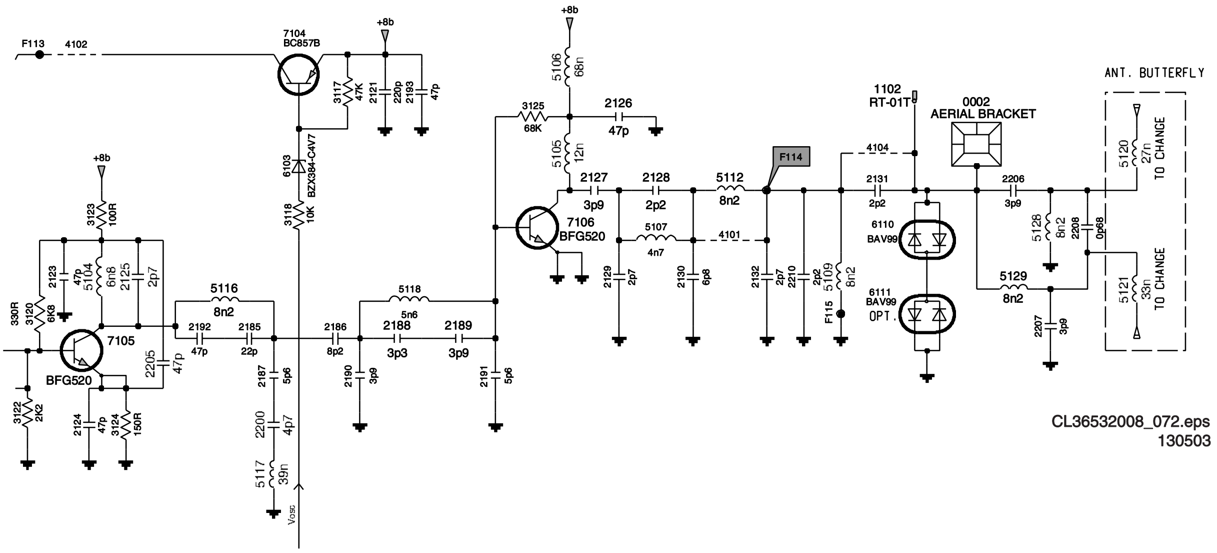

F113
4102
7104
BC857B
+8b
3117 47K
2121 220p
2193 47p
6103 BZX384-C4V7
3118 10K
+8b
3123 100R
330R
3120 6K8
2123 47p
5104 6n8
2125 2p7
5116 8n2
2192 47p
2185 22p
7105
BFG520
2205 47p
3122 2K2
2124 47p
3124 150R
2187 5p6
2200 4p7
5117 39n
Vosc
2186 8p2
5118 5n6
2188 3p3
2189 3p9
2190 3p9
2191 5p6
+8b
5106 68n
3125 68K
2126 47p
5105 12n
2127 3p9
7106
BFG520
2128 2p2
5107 4n7
5112 8n2
F114
4101
2129 2p7
2130 6p8
2132 2p7
2210 2p2
5109 8n2
F115
1102
RT-01T
0002
AERIAL BRACKET
4104
2131 2p2
6110 BAV99
6111 BAV99 OPT.
2206 3p9
5126 8n2
2208 0p68
5129 8n2
2207 3p9
ANT. BUTTERFLY
5120 27n TO CHANGE
5121 33n TO CHANGE
CL36532008_072.eps
130503

Figure 9-19 Multiplier and power amplifier

The LO signal is multiplied by two in a separate stage (7105) in order to get a high isolation between the local oscillator and the antenna. There is quite some filtering necessary at the output, necessary to prevent the oscillator frequency and its harmonics from reaching the power amplifier (PA) stage.
There is also a 2-stage band stop filter followed by an elliptic low pass filter. This has to do with the legal requirements for spurious radiation.
The PA stage with 7106 increases the power level to about +15 dBm at the output of the filter. The transistor is polarised into class A for minimum harmonic content and furthermore there is output filtering available to further reduce the harmonics. The configuration differs with the frequency version.
The 864 MHz version uses an integrated antenna on the board. The printed dipole is driven symmetrically by a "balun" for optimum power transfer and symmetry. There are protection diodes (6110 & 6111) foreseen but not stuffed for ESD when applying an external antenna (the 433 MHz version uses an external antenna).

Power Supply and Power Down

The board is having a low drop voltage regulator 7117, which has an output voltage of 8.3 Vdc. The 5 V supply is extracted via transistor 7119.
The "power down detection" is done via 6105 and 7118: when the voltage drops, transistor 7118 comes out of saturation rapidly, thereby putting the stereo coder in Hi-Z position (idle). No AF output will be there from the stereo coder.
Suitable timing signals for the sub carrier and pilot frequency are extracted out of a 12 MHz crystal by division with 256 and 512 respectively. The whole chip 7110 can be enabled / disabled via the synthesiser port P2 (V_pil, "low"= enable). The outputs are square wave 5 V compatible.
The multiplex output from the stereo coder is fed into a limiter amplifier 7116B, which sets a limit to the output voltage. In case the audio input signals increase towards 1.3 V, the signal will be flat-topped and limited symmetrically. This of course introduces distortion, but is necessary in order to observe the bandwidth limitations as set by legal standards. The base-emitter junctions of 7120 and 7121 form the limits.
This output signal is then summed with the pilot signal, which is injected just as a plain square wave. The amplifier 7116A forms a second order low pass filter that cuts at about 90 kHz. This reduces the harmonics present in the composite output signal. This signal is actually fed via trim potmeter 3179 towards the varicap in order to achieve FM modulation. Trim potmeter 3179 is aligned for a deviation of 50 kHz. There are three ways to align the trim potmeter:

- Use a FM modulation analyser meter such as FAM (Rohde and Schwarz) or similar.
- Put the RF output on a spectrum analyser and connect both audio inputs together at 0.41 V/400Hz at the inputs of the TX. There are two peaks visible on the screen. Align until the difference between the -3dB peaks is 2 * 50 kHz or 100 kHz.
- Use an accompanying receiver and while modulating both inputs of the TX, align until the measured audio output of the RX is 1.3 V_rms.

9.7.4 Receiver

Block Diagram

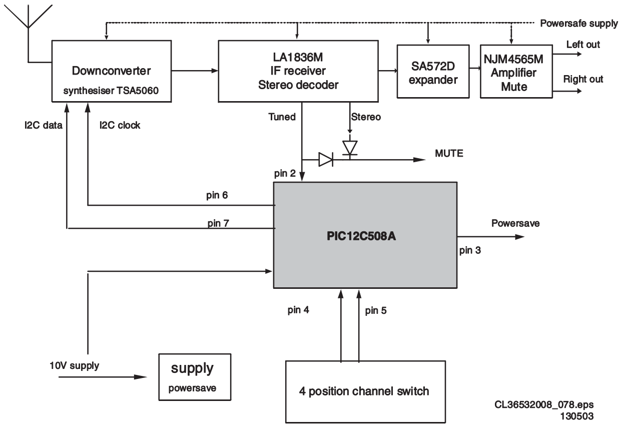

Powersafe supply
Downconverter
synthesiser TSA5060
LA1836M
IF receiver
Stereo decoder
SA572D
expander
NJM4565M
Amplifier
Mute
Left out
Right out
I2C data
I2C clock
Tuned
Stereo
MUTE
pin 2
pin 6
pin 7
PIC12C508A
Powersave
pin 3
pin 4
pin 5
10V supply
supply
powersave
4 position channel switch
CL36532008_078.eps
130503

Figure 9-20 Block diagram receiver

Antenna Input

The antenna input is tuned for a 17 cm telescopic antenna. The input is ESD protected by diode 6602. The SAW filter 1602 protects the receiver for out of band interference.

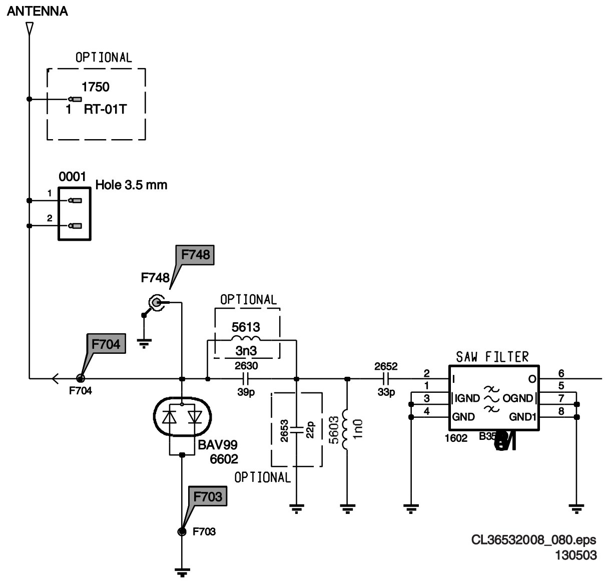

ANTENNA
OPTIONAL
1750
1 RT-01T
0001
Hole 3.5 mm
1
2
F748
F748
OPTIONAL
5613
3n3
2630
39p
F704
F704
2653
22p
5603
1n0
2652
33p
SAW FILTER
2
1
3
4
I
IGND
GND
O
OGND
GND1
6
5
7
8
1602
BAV99
6602
OPTIONAL
F703
F703
CL36532008_080.eps
130503

Figure 9-21 Antenna input circuit

LNA and Mixer

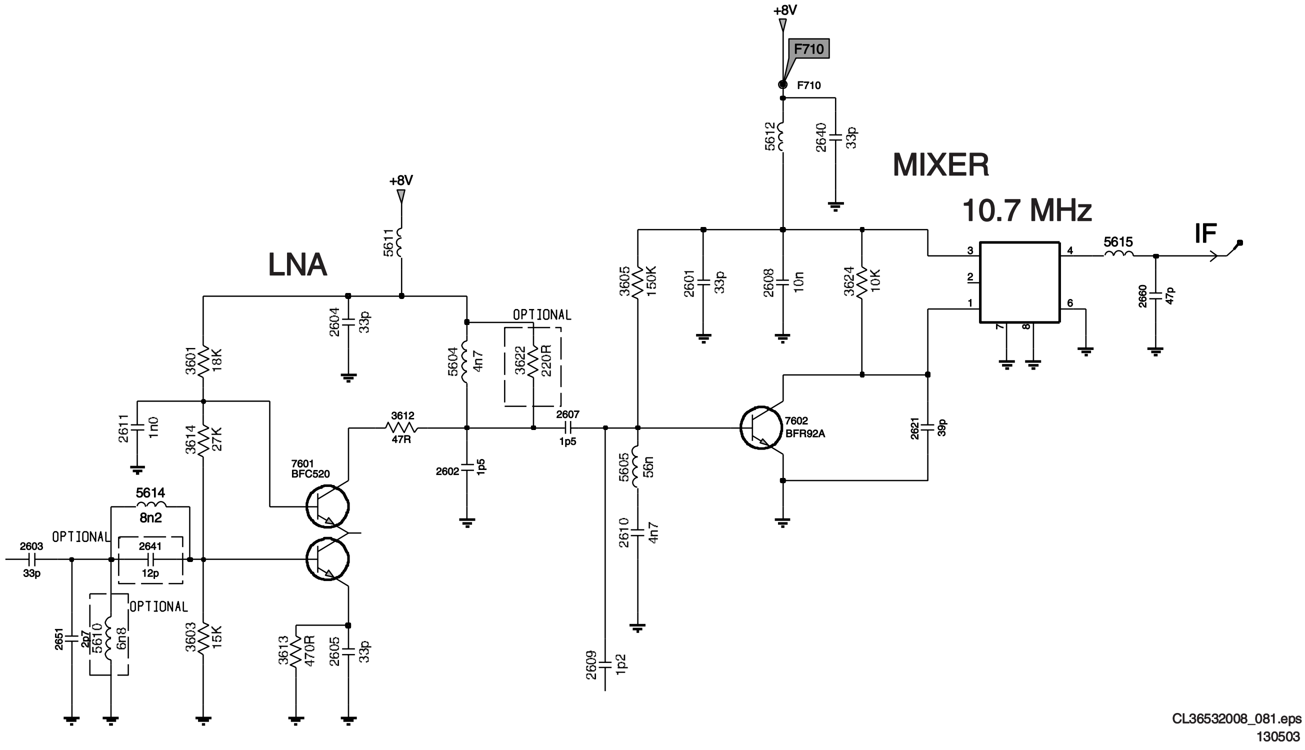

+8V
F710
F710
5612
2640
33p
MIXER
10.7 MHz
IF
5615
2660
47p
3
2
1
4
6
7
8
+8V
5611
LNA
2604
33p
3605
150K
2601
33p
2608
10n
3624
10K
OPTIONAL
5604
4n7
3622
220R
3601
18K
2611
1n0
3614
27K
3612
47R
2607
1p5
2602
1p5
7601
BFC520
5605
56n
7602
BFR92A
2621
39p
5614
8n2
2603
33p
OPTIONAL
2641
12p
2610
4n7
OPTIONAL
2651
2p7
5610
6n8
3603
15K
3613
470R
2605
33p
2609
1p2
CL36532008_081.eps
130503

Figure 9-22 LNA and mixer circuit

The LNA is a cascode configuration around transistor 7601. This circuit provides gain with a low noise figure, while providing isolation from the oscillator to antenna. This isolation is necessary to comply with the legal requirements for radiated interference.

The output of the LNA and the LO signal is mixed in transistor 7602. This is a one transistor mixer that provides high conversion gain with low LO input signal. This level is only around 20 mV. The reason for this high conversion gain is that there is a 10.7 MHz trap at the base (5605 - 2610).

The output of the mixer is a tuned circuit at 10.7 MHz. The coil is pre-aligned at the factory.

Synthesizer and Local Oscillator

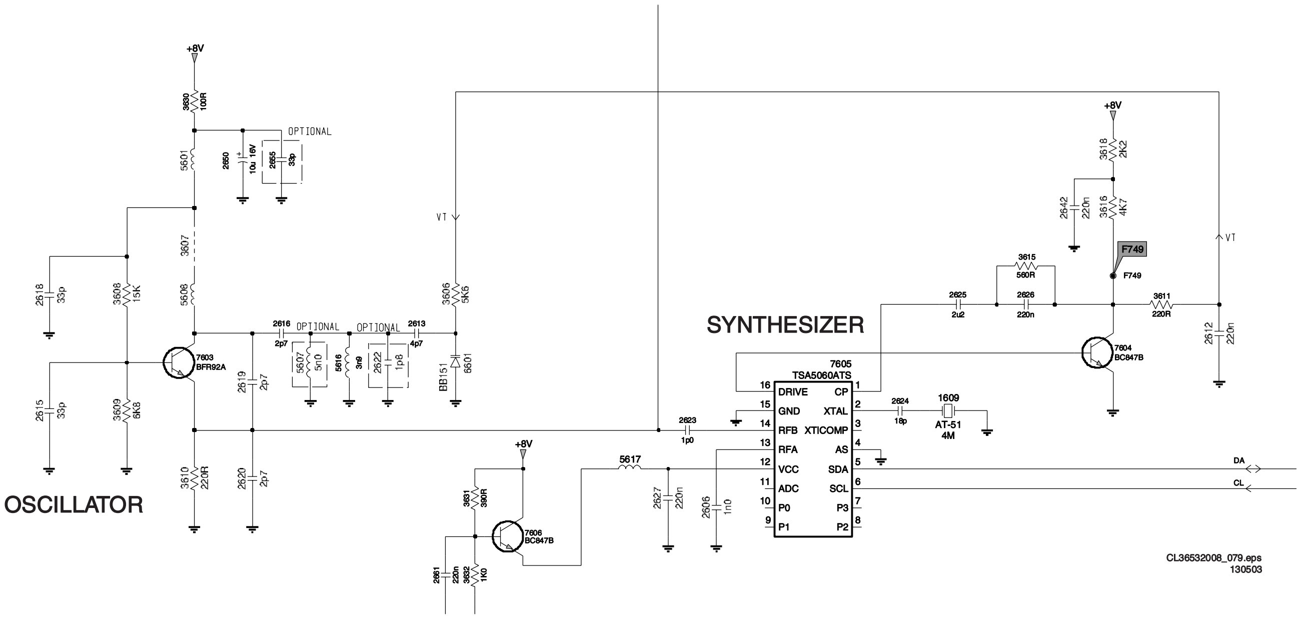

SYNTHESIZER
OSCILLATOR
+8V
OPTIONAL
VT
7603 BFR92A
7604 BC847B
7606 BC847B
7605 TSA5060ATS
DRIVE
GND
RFB
RFA
VCC
ADC
P0
P1
CP
XTAL
XTICOMP
AS
SDA
SCL
P3
P2
1609 AT-51 4M
F749
DA
CL
BB151 6601
5617
CL36532008_079.eps
130503

Figure 9-23 Synthesizer circuit

The internal circuitry of the TSA5060A can be seen in figure below.

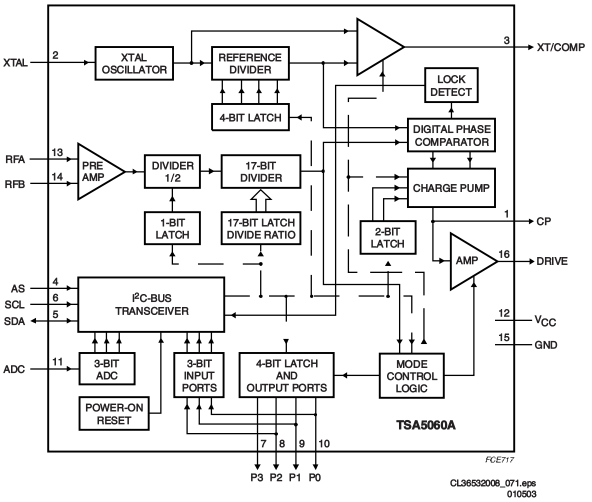

XTAL
RFA
RFB
AS
SCL
SDA
ADC
XTAL OSCILLATOR
REFERENCE DIVIDER
4-BIT LATCH
LOCK DETECT
DIGITAL PHASE COMPARATOR
CHARGE PUMP
PRE AMP
DIVIDER 1/2
17-BIT DIVIDER
1-BIT LATCH
17-BIT LATCH DIVIDE RATIO
2-BIT LATCH
AMP
I²C-BUS TRANSCEIVER
3-BIT ADC
3-BIT INPUT PORTS
4-BIT LATCH AND OUTPUT PORTS
MODE CONTROL LOGIC
POWER-ON RESET
TSA5060A
XT/COMP
CP
DRIVE
VCC
GND
P3 P2 P1 P0
FCE717
CL36532008_071.eps
010503

Figure 9-24 Block diagram TSA5060A

The TSA5060A is software controlled via the I2C bus by the PIC12C508 microcontroller.
There is no hardware version recognition foreseen but the version can be read out from the PIC12C508 microcontroller. There is a different software code for the 433, 864, or 914 MHz version.
The reference quartz crystal is 4 MHz and is divided to a lower reference frequency of 200 kHz or 100 kHz (depending on the version). The PLL filter is passive and includes 2625, 2626, 3615, 3611, and 2612. The transistor 7604 is part of the PLL current source, and allows connection to higher supply voltages as +5V.
The local oscillator (LO) is a common base transistor (7603) that is oscillating at the fundamental frequency. The frequency is tuned by the varicap 6601 until the tuning voltage is in the range of the loop filter (between 0.5 and 7 Vdc). If the voltage is outside this range then possibly, the division ratio is chosen outside the normal range or some frequency dependant component around the transistor is faulty.

IF Amplifier

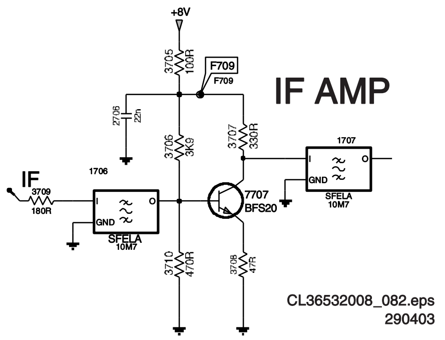
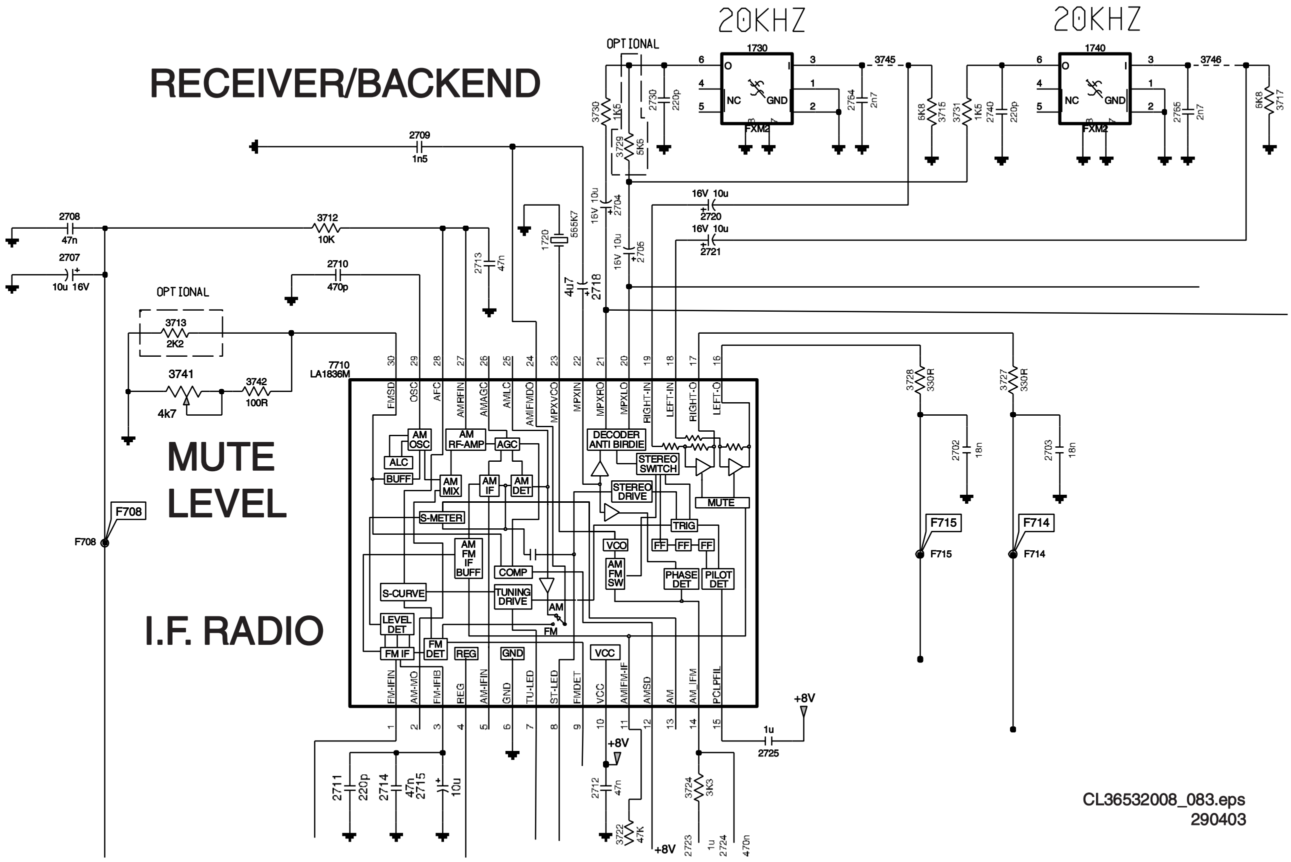

IF AMP
+8V
3705 100R
F709
2706 22n
3706 3K9
3707 330R
1707
SFELA 10M7
IF
3709 180R
1706
SFELA 10M7
7707 BFS20
3710 470R
3708 47R
CL36532008_082.eps
290403

Figure 9-25 IF amplifier circuit

The mixer output signal is filtered by two ceramic IF filters. An IF amplifier (7707) is reducing the loss introduced by these filters.

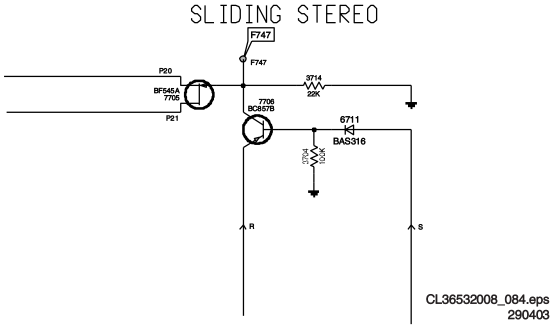
FM Detector, Stereo Decoder, Amplifier


RECEIVER/BACKEND
MUTE
LEVEL
I.F. RADIO
20KHZ
20KHZ
OPTIONAL
1730
1740
FXM2
3745
3746
7710
LA1836M
F708
F715
F714
+8V

CL36532008_083.eps
290403

Figure 9-26 IF demodulator circuit

The IF signal is demodulated in the 7710 (LA1836M), the IF Radio IC. This IC has a coil FM detector that is aligned (for alignment instructions see chapter "Electrical Alignments"). The stereo decoder is integrated and needs no adjustment. The demodulated signal is filtered with 1730/1740. These filters are pre-aligned and are reducing the pilot- and sub carrier frequency. This is necessary to prevent wrong operation of the expander circuit.


SLIDING STEREO
F747
P20
BF545A
7705
P21
3714
22K
7706
BC857B
6711
BAS316
3704
100K
R
S

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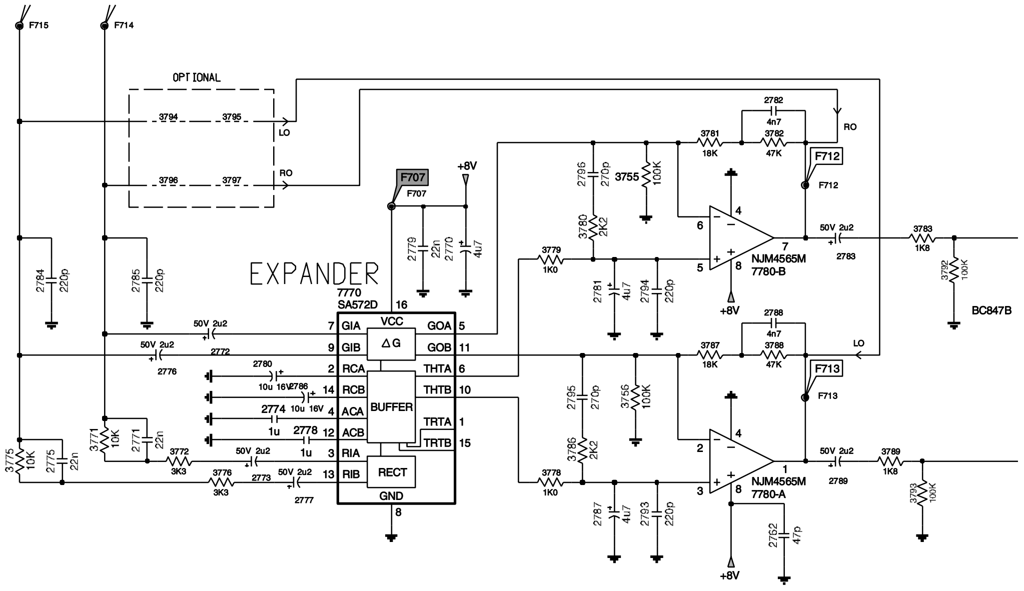
290403

Figure 9-27 Sliding stereo circuit

There is a sliding stereo circuit for reducing the stereo noise at low signal field strengths. Transistor 7705 is short-circuiting the Audio Left and Audio Right signals at low field strengths. The crossover level must be aligned (for alignment instructions see chapter "Electrical Alignments"). There is also a "mute level" alignment, which is set at 10 V RF input level. At this signal level, the wireless audio link is muted.

Audio Expander


F715
F714
OPTIONAL
3794
3795
3796
3797
LO
RO
EXPANDER
7770
SA572D
GIA
GIB
RCA
RCB
ACA
ACB
RIA
RIB
VCC
ΔG
BUFFER
RECT
GND
GOA
GOB
THTA
THTB
TRTA
TRTB
F707
+8V
2779 22n
2770 4u7
2784 220p
2785 220p
3775 10K
2775 22n
3771 10K
2771 22n
3772 3K3
3776 3K3
2776
2772
2780
2786
2774
2778
2773
2777
50V 2u2
10u 16V
1u
2796 270p
3755 100K
3780 2K2
2781 4u7
2794 220p
3779 1K0
3781 18K
3782 47K
2782 4n7
F712
RO
NJM4565M
7780-B
50V 2u2
2783
3783 1K8
3792 100K
BC847B
2788 4n7
3787 18K
3788 47K
F713
LO
2795 270p
3756 100K
3786 2K2
3778 1K0
2787 4u7
2793 220p
NJM4565M
7780-A
2789
3789 1K8
3793 100K
2762 47p
+8V

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130503

Figure 9-28 Expander circuit

The audio expander uses device SA572 (7770) that is intended for high-end applications. It is used together with a low noise OpAmp (7780).

There is an expanding factor of 2 in dB. There is a variable gain cell (variable resistor) in the negative input of the OpAmp 7780 (NJM4565M). There is a rectifier cell that detects the input voltage and translates into a current send to the gain cell .The rectifier has an attack time constant and a decay time constant, which is optimised to give the best auditive result.

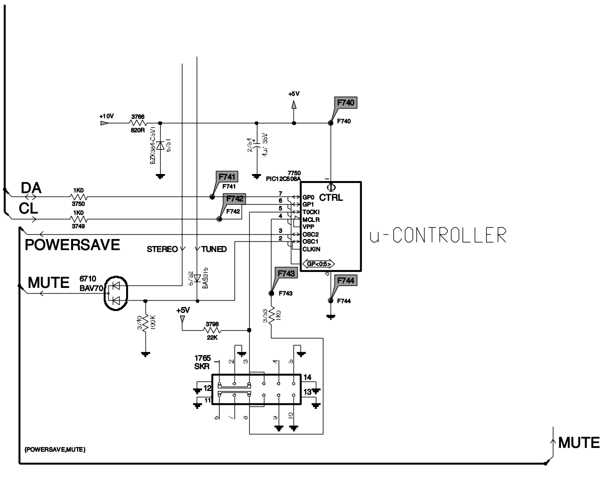
If the input (V_in) rises with e.g. 2 times then the output will rise 4 times. This is because the negative input resistor formed by the gain cell is decreased with a factor of two.

Remember that for an OpAmp V_out = V_in*((Rf+Rin)/Rin) where Rf is constant (Rin= internal gain cell resistance).

Microcontroller

The microcontroller is an OTP Microchip PIC12C508A type with 512-bit EPROM and six I/O lines. The controller has to be programmed on the production line according the required version of 433 or 864 MHz.

The main functions of the uP is reading the setting of the (4 position) slide switch within every 250 milliseconds, reading the tuned info continuously, and start the power save mode if necessary.


DA
CL
POWERSAVE
MUTE
STEREO
TUNED
6710 BAV70
F740
F741
F742
F743
F744
+5V
+10V
7750 PIC12C508A
CTRL
u-CONTROLLER
1765 SKR
(POWERSAVE,MUTE)
MUTE

CL36532008_086.eps
130503

Figure 9-29 Microcontroller circuit

Frequency setting: This is necessary when the 4-position slide switch is changed. In an internal look-up table, the four required frequencies for the local oscillator are stored. The output towards the synthesiser chip in the front-end is in I2C form. The synthesizer is the only device on the bus. During frequency setting the "mute" is active.

Scanning of the channel switch occurs within every 250 milliseconds (in any mode).

When "tuned" is going "high" in normal mode, the channel data should be transmitted to the synthesizer to protect the receiver in case of hang-up situations.

Muting: The "mute" of the receiver is controlled by the IF receiver part, but can be overridden by the microcontroller. The "mute" action initiated by the microcontroller is necessary during channel switching and in the standby mode. Muting has priority on all other main tasks. The hardware mute is the result of an "AND" function between the "Tuned" and "Stereo" information. The "tuned" information can be read by the microcontroller on pin 2. The same pin has to be put in output mode to activate the microcontroller initiated "mute". This "mute" must be used during the frequency setting and during the standby mode.

Power save mode: The main supply can be switched off with the “power save” control line to reduce the current consumption. The microcontroller is always powered by the power supply. All other electronics can be put into power save mode.
After approx. 10 minutes of no "Tuned" signal the receiver goes into power save mode. Once in power save mode, the receiver is operated in “listen-sleep” mode to reduce the average current consumption.

Power Supply
The board is having a low drop voltage regulator 7790, which has an output voltage of 8 Vdc.
The 5 Vdc supply for the micro controller is extracted from the 10 Vdc input supply via a zenerdiode 6751. The 5 Vdc supply of the synthesizer is extracted from transistor 7606. The POWERSAVE signal is also provided to the connector for the amplifier.

9.7.5 Amplifier (Diagram W)

General
The amplifier module delivers 2 x 15 Watt into 4 ohm speakers. There is an incorporated high-pass filter because of the use of soft-flat panels as speaker. The speakers are connected through 2.5 mm mono-jacks. The crossover will be around 150 Hz. The amplifier uses a “cool power” amplifier IC (TDA1564TH).
The module is featured with an additional “wired backup” input (3.5mm stereo-jack) and a 2-colour LED indicator. Green indicates the active state, red is standby. There is also an on-board 10 Vdc regulator, specially intended for the TX receiver.

DC-references and Supply
The reference voltage used in the preamp-filter is made of the internal reference of the amplifier chip TDA1564TH. This reference is buffered by 7100-D and present on pin 14 of 7100-D. The reference is only valid when the chip is active or muted.
The power supply for the pre-amp is made by using the filter circuitry 3100, 2101, and 2100. This supply is 10.6 Vdc for all operating conditions.
The built-in voltage regulator LM317MDT delivers 10 Vdc for the receiver board. The 10 Vdc is set by 3141 and 3142. This is the normal operating condition by wireless use of the whole set.
This 10 Vdc supply can be switched "off" by connecting a 3.5 mm plug into the "wired backup" input. By doing so, the base of 7103 is connected to ground, 7111 is saturated, and pin 1 of 7110 is on ground level. The result is 1.25 Vdc on the supply line to the receiver.

Mute Circuitry
In normal operating circumstances, the voltage on the MODE pin of the amplifier will be 9.7 Vdc. Transistors 7104 and 7107 are not saturated at that moment. When the receiver generates a ”mute” (4 Vdc on pin 6 of connector 1106), then 7107 will saturate and pulls down the level on pin 2 of 7101 to 2.3 Vdc. All DC-references stay as they were, the LED stays green, but no sound is produced on the outputs.
When the receiver goes into "power save" mode (when 10 minutes no signal from the TV set), the circuitry around 7104 pulls the mute line down to nearly 0 V. In this condition, the amplifier is completely in "standby" mode, while all DC-references are disabled. The LED red will be "on", while green is "off".
When the receiver detects a valid signal from the TV set, the POWERSAVE line becomes continuously "low", and after a small time (2137, 3133, 7104) 7104 is turned "off". At the same moment, the mute line becomes "low" and the amplifier is enabled again.

Amplifier considerations
The 26 dB amplifier TDA1564TH operates on 13 Vdc and can deliver 2 x 15 Watts into 4 ohm loads. The dissipation is minimized by internally switching in the TDA1564 from Single Ended (SE) to Bridge Tied Load (BTL) mode, only when a higher output voltage swing is needed.
Input signals from the receiver (or the 3.5 mm stereo jack) input are filtered in the two-section high pass filter around 7100-B and 7100-A. This is needed because the flat panel speakers cannot reproduce low frequency sound. The -3 dB point is somewhere around 150 Hz.
Input sensitivity of the amplifier for maximum output:
- Wireless use (signals coming from the receiver board): typical 1.4 V_rms
- Wired use (signals coming from the 3.5 mm jack input): typical 2.5 V_rms

9.8 Tuner Board

9.8.1 General

The ECO6 tuner module is an electronic controlled digital tuner. It is an economic version of the TUNER 92 (economic means: no special front-end unit, new designed radio IC).

9.8.2 Key Components

- Tuner front end: FE450.
- Radio IC: TEA5762.

Tuner front end

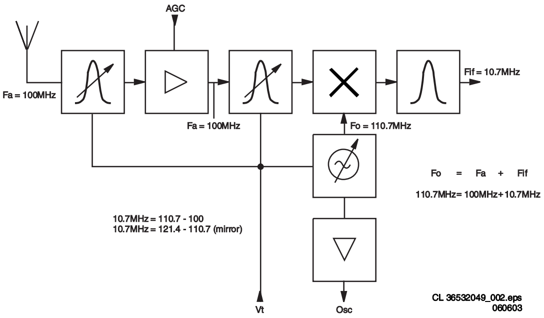


Figure 9-30 Block diagram tuner front-end

This is a ready made and trimmed unit.

Radio IC TEA5762
This IC is a 44 pins monolithic integrated AM-receiver and FM-IF part with demodulator and stereo decoder. It is designed for the use with an external FM front-end.
It incorporates internal stabilised power supplies that allow a wide supply voltage range from 2.5 V up to 12 V without any loss of performance.

The radio
For FM operation, an external FM front-end is necessary. This is switched "on" and "off" by the FM_ON/OFF signal which is generated in the bus system.
The AFC circuit in the TEA5762 provides a tuning voltage to drive the VCO of the external FM front-end.
The frequency of the external VCO is counted in the Self Tuned Radio (STR) tuning system.
The FM-IF circuit is designed for distributed IF ceramic filters (items 5109 and 5110). The FM quadratic detector uses a ceramic resonator.
The PLL stereo decoder incorporates a signal dependent stereo-blend circuit and a soft-mute circuit.

Tuning
The tuning-concept of Self Tuned Radio (STR) is based on "fuzzy logic": it mimics hand tuning (hand tuning is a combination of coarse and fine-tuning to the qualitatively best frequency position). Consequently, the tuning system is very fast.
The tuning algorithm is completely integrated; so there are only a few external components needed.
The bus only consists of three wires (BUS-CLOCK, DATA and WRITE-ENABLE), so the bus and the microcontroller can be kept very simple. The microcontroller must basically give two instructions:

- **Preset operation.** In this mode, the microcontroller has to load information such as frequency band, frequency, and mono/stereo. This information has to be sent via the bus to the STR. After the AFC has tuned the real frequency to the desired frequency, an in-lock signal can be generated. In the FM mode the tuning voltage controls the VCO of the external FM front-end and the frequency of the VCO is counted in the TEA5762.
- **Search operation.** During a search operation, the only action the microcontroller has to take is: sending the desired band plus the direction and the search sensitivity level to the STR. STR. The search operation is performed until an in-lock signal is generated. The AFC then fine tunes to the station. The frequency belonging to the found station will be counted by the counter and written into the last-station memory and the shift register of the counter. At this time, the frequency is available in the shift register and can be read by the microcontroller. The microcontroller decides whether the frequency is within the desired frequency band. If so, this frequency can be stored under a preset and if not, a new search action should be started.

The Bus
The TEA5762 radio has a bus, which consists of three wires:

- BUS-CLOCK, software driven clock input (pin 27).
- DATA, data input / output (pin 28).
- WRITE-ENABLE, write / read input (pin 29).

These three signals, together with the mono/stereo pin (MO/ST; pin 24), communicate with the microcontroller on the interface board.
The mono/stereo indicator has two functions, which are controlled by the BUS-CLOCK: "mono/stereo" and "tuned/not tuned".

9.8.3 Basic fault finding on the tuner module.

If there is a malfunction of the module, one can proceed as follows:

1. Check the available supply voltages
   - Incoming supply 12 V (10 - 14 V on pin 4 of connector 1120)
   - Supply of IC7101: pin 7 must be 7.8 V, and pin 22 must be 11 V.
2. Check the data communication between microprocessor and IC7101. Select other preset and check with an oscilloscope if data is send on pin 29 (WRITE_EN), pin 27 (CLOCK), and pin 28 (DATA).
   - If no data transfer can be seen when activating a button on the RC, the problem must be located around the microprocessor.
   - If data transfer is occurring, probably 7101 is defective.
3. If data communication towards 7101 is OK, the switch settings (pins 30 and 31) of 7101 can be checked.
4. At this point the standard fault locating can be started, as usual from AF output working towards RF input.

9.9 LCD Board

See description in next paragraph "Interface Board".

9.10 Interface Board

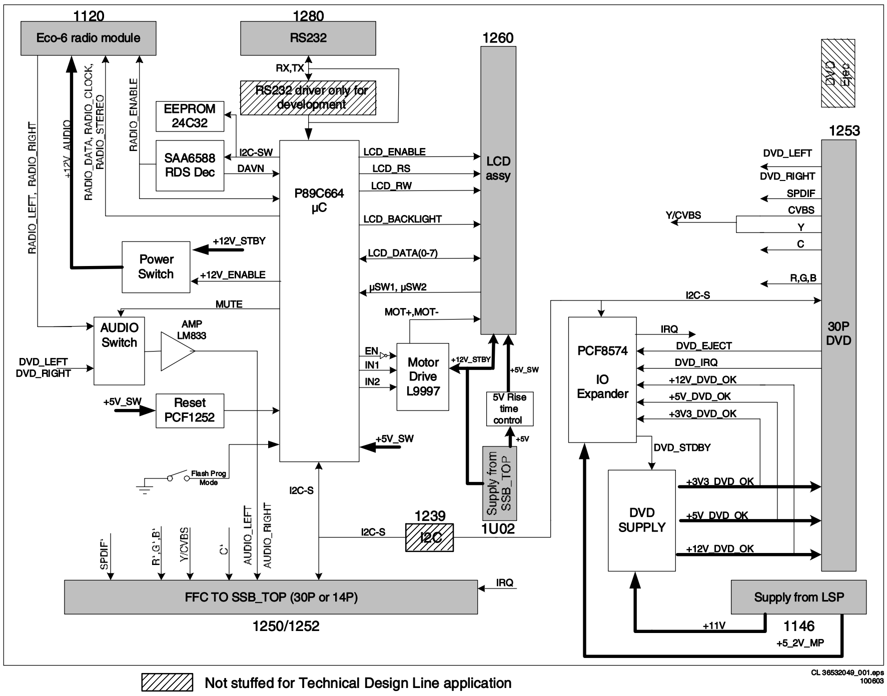

1120
Eco-6 radio module
1280
RS232
RX,TX
RS232 driver only for development
1260
LCD assy
EEPROM 24C32
SAA6588 RDS Dec
I2C-SW
DAVN
P89C664 µC
RADIO_LEFT, RADIO_RIGHT
+12V_AUDIO
RADIO_DATA, RADIO_CLOCK, RADIO_STEREO
RADIO_ENABLE
LCD_ENABLE
LCD_RS
LCD_RW
LCD_BACKLIGHT
LCD_DATA(0-7)
µSW1, µSW2
MOT+,MOT-
Power Switch
+12V_STBY
+12V_ENABLE
MUTE
AUDIO Switch
AMP LM833
DVD_LEFT
DVD_RIGHT
EN
IN1
IN2
Motor Drive L9997
+12V_STBY
+5V_SW
5V Rise time control
+5V
Supply from SSB_TOP
1U02
+5V_SW
Reset PCF1252
+5V_SW
Flash Prog Mode
I2C-S
1239
I2C
I2C-S
SPDIF'
R',G',B'
Y/CVBS
C'
AUDIO_LEFT
AUDIO_RIGHT
IRQ
FFC TO SSB_TOP (30P or 14P)
1250/1252
DVD Ejec
1253
DVD_LEFT
DVD_RIGHT
SPDIF
CVBS
Y/CVBS
Y
C
R,G,B
I2C-S
30P DVD
PCF8574 IO Expander
IRQ
DVD_EJECT
DVD_IRQ
+12V_DVD_OK
+5V_DVD_OK
+3V3_DVD_OK
DVD_STDBY
DVD SUPPLY
+3V3_DVD_OK
+5V_DVD_OK
+12V_DVD_OK
Supply from LSP
+11V
1146
+5_2V_MP
Not stuffed for Technical Design Line application
CL 36532049_001.eps
100603

Figure 9-31 Block diagram TDL interface board

The TDL (Technical Design Line) interface board fulfils several requirements:

- Interface (radio, motor driver, LCD, etc.).
- RDS decoder and audio switch.
- DVD interface.
- Voltage regulator.

This panel has 2 diversities:

- Full spec: all components stuffed.
- Eco TDL: has no DVD, so the PCF8574, supply of DVD, and connectors 1146 and 1253 are not stuffed.

9.10.1 Interface Control

The 89C66x is a new family of microcontrollers derived from the 87C65x but with on-chip flash memory i.s.o. an EPROM. This (slave) microcontroller has hardware I2C support to communicate with the host. For local control, a software I2C bus is used. The device works on 5 V, and so it is switched "off" during the standby of the set.

9.10.2 Radio Interface

The ECO6 is used as stereo FM radio. The module has also AM, but this is not used in this application.
The control of the module is through a 4-wire bus. Some wires have double functions:

- The WRITE ENABLE line also contains MPX data.
- The combination of the CLOCK and MONO/STEREO lines give status information.
- The DATA line is used besides writing and reading of data, for indication if searching has finished.

Timing for WRITE mode:

- RADIO_ENABLE and RADIO_DATA signals must be stable for 20 us before the rise edge of RADIO_CLOCK (set-up time).
- RADIO_DATA must not change during at least 1.5 us after the RADIO_CLOCK is high (hold time).

Timing for READ mode:

- RADIO_DATA signals must be read 20 us after the rise edge of RADIO_CLOCK.
- When the search is finished (RADIO_DATA becomes low), the first data bit can be read after 20 us.

Notes:

- The RADIO_ENABLE_MPX has a delay up to 1 ms.
- After sending the SEARCH START command, the RADIO_ENABLE_MPX has to stay high for minimum 3 ms, to prevent a search stop on the actual tuned station.
- Set RADIO_CLOCK high about 350 ms after frequency setting, and keep it high until the RADIO_STEREO becomes low, but minimum for 100 ms.

Power Supply

The power supply to the radio module can be switched "on" and "off" by the microcontroller (pin 28), by means of a power switch (circuit around items 7001, 7003 and 7005). The power switch is used to switch the +12V_AUDIO of the radio "on" and "off". The switch is opened when the +5V_SW is "off" (hardware). If the +5V_SW is present, the switch is controlled by software:

- RADIO_ON: +12V_ENABLE = 0
- RADIO_OFF: +12V_ENABLE = 1

Audio Switch

The ECO6 module delivers Left and Right audio (on connector 1120, pins 1 and 3). The module does not contain a real mute circuit (only mute when not accessing the module), so the mute must be done by means of the MUTE signal controlling the ENABLE pin of audio switch 7103 (pin 6). This is automatically activated when a tuning action is done. When accessing the radio module, the ENABLE line must be set to "low".
With the audio switch 7103, the audio L/R of the DVD is switched with the L/R of the radio, to generate the L/R output of the module.

The audio sound output is controlled by means of an analogue switch HEF4053. The +12V_ENABLE signal must be "low" to enable the sound from DVD. At reset, this signal is "high" thus enabling the sound from the radio board.

RDS

RDS information is transmitted on a 57 kHz sub carrier as amplitude modulated suppressed carrier. It is modulated with a coded signal at a bit-rate of 1187.5 bits/sec. The deviation due to the 57 kHz sub carrier is very small (about 2 kHz). This MPX data from the ECO6 radio is fed to the RDS decoder chip SAA6588. This chip does RDS demodulation, symbol decoding, and error correction. The data is available via the I2C bus. The SAA6588 has a buffer of 40 ms (= 1/2 groups = 2 blocks). The DAVN (Data Available) line can be programmed to give an interrupt when e.g. a block is received.
An optional EEPROM (item 7011) can be used as non-volatile memory for storage of example FM presets or RDS Program Service Names.

9.10.3 LCD Interface

LCD

The LCD is controlled through a LCD controller chip from Samsung: S6A0070. This chip has an 8-bit data bus.
It is a character based display driver of 1 line x 16 characters, each character being 5 x 7. There are 192 characters defined. One character is used to display icons. This means that 15 characters are left to display text. In total 35 icons can be displayed.
The LCD is powered with the +5V_SW. This means that in Standby, the LCD is not active.

Backlight

The backlight of the LCD is controlled by means of a PWM pin of the microcontroller (pin 7).

Motor

For the motor control, the L9997ND (or compatible) is used. Three lines are needed to control the IC.

- IN2.
- IN1.
- ENABLE (via inverter 7010 to actual ENABLE pin).

A high level on the ENABLE line puts the controller in standby mode (this is the default state).

Table 9-1 Motor control

IN1	IN2	Motor
Low	Low	Idle
Low through PWM	High	Negative motor voltage
High	Low through PWM	Positive motor voltage
High	High	Idle = default

In order to reduce the motor voltage, the IN1/IN2 lines are chopped. Chopping the control lines changes the speed of the motor (PWM control). This is needed when DC motors are used with a rated voltage of less than 12 V and for smooth start/stop of the motor.
Two lines, USW1 and USW2 (pins 5 and 6), tell the microcontroller whether the movement is completely closed or completely open. In between, there is no indication of the position of the moving part.

9.10.4 DVD Interface

The control of the DVD slot-loader (if present) is done through a PCF8574 IO expander. By driving DVD_STDBY low, the 3.3V, 5V, and 12V supply will be sent to the DVD module.
It is also possible to check that every voltage to the DVD is high by reading signal +3V3_DVD_OK, +5V_DVD_OK, and +12V_DVD_OK through the PCF IO expander.

Table 9-2 DVD I/O expander signals

Signal Name	I/O	Description
EJECT	I	Low when the DVD Eject knob is pressed (not used for TDL)
+5V_DVD_OK	I	Low when the 5V supply to DVD is off
IRQ	O	Interrupt line to OTC
DVD_MUTE	I	Mute indication from DVD
DVD_IRQ	I	Interrupt line from DVD
12V_DVD_OK	I	Low when the 3.3V supply to DVD is off
3V3_DVD_OK	I	Low when the 3.3V supply to DVD is off
REAL_STANDBY	O	High to disable 12V, 5V and 3.3V supply to DVD

The output of audio sound is controlled by means of an analogue switch HEF4053. The +12V_ENABLE signal must be “low” to enable the sound from DVD.

9.10.5 Voltage Regulator

This part takes care for the voltages that are needed for the (optional) DVD slot loader (+3.3V, +5V, and +12V)
The L4978 is a step-down switching regulator delivering a 3.3 V. The device uses an internal power D-MOS transistor (with a typical Rds_on of 0.25 W) to obtain high efficiency and high switching speed. A switching frequency of 150 kHz is set via C2406 and R3400. Input voltage is derived from the +11V coming from the Standby supply.
Other features of this DC-DC converter include pulse-by-pulse current limit, hiccup mode for short circuit protection, voltage feed forward regulation, soft-start, protection against feedback loop disconnection, inhibit for zero current consumption and thermal shutdown.

Notes:
- The LEDs on this board are not stuffed in production, they only were used during development for debugging purposes.
- Switch 1300, is also only meant for development purposes.

9.10.6 Interface Board Signal Descriptions

Table 9-3 Interface board signal descriptions

Signal	Description
11V_STANDBY	Stand by supply voltage
5V	Supply voltage
SPDIF_DVD	SPDIF from e.g. an internal DVD drive
12V_AUDIO	Supply voltage for the radio module ECO6
DVD_L/R	Audio from DVD module
RADIO_L/R	Audio from radio module
OUT_L/R	Audio output of the module
+12V_ENABLE	Control signal to switch on the radio module
DATA/CLOCK/ MONO/STEREO	Control signals for the radio module
WRITE_ENABLE	Control signal for the radio
MPX	Multiplex signal containing audio and RDS information
DAVN	Data available signal from the RDS decoder chip
I2C_S	Software I2C bus
USW1_LCD_DOWN	Indicates the close-end position of the LCD display
USW2_LCD_UP	Indicates the open-end position of the LCD display
FORWARD	Control line for the motor control L9997ND
REVERSE	Control line for the motor control L9997ND
ENABLE	Control line for the motor control L9997ND
M+	Positive motor voltage
M-	Negative motor voltage
I2C	I2C bus to host
IRQ	Interrupt request line to host

9.11 Software Upgrading

9.11.1 Introduction

In this chassis, you can upgrade the software via ComPair. This offers the possibility, to replace the entire SW image without having to remove the flash-RAM from its socket. You can find more information on how this procedure works in the ComPair file. It is possible that not all sets are equipped with the hardware, needed to make software upgrading possible. To speed up the programming process, the firmware of the ComPair interface can be upgraded. See Chapter "Service Modes ..."; paragraph "ComPair" - “How To Order” for the order number.

9.11.2 Specifications

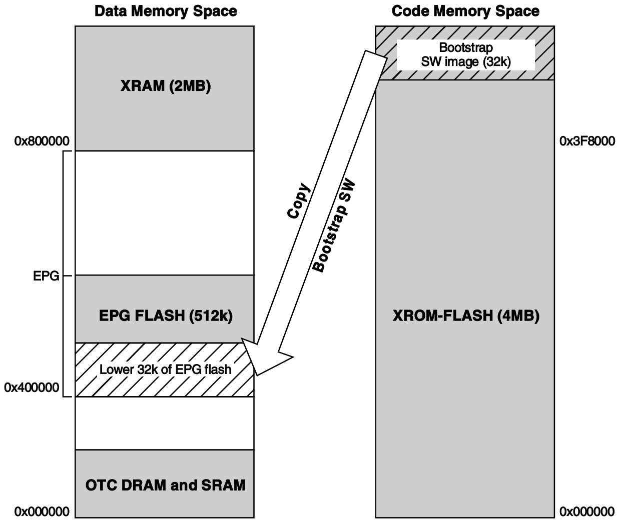
Some specifications are:
- The upgrade feature makes use of I2C to transfer a new SW image (4 MB).
- It requires the ComPair interface Box (RS232 to I2C).
- The I2C bus is available at the rear side of the set, BUT it is still necessary to open the set to place a dedicated jumper. This, to avoid FCR (Field Call Rates).
- It uses a ZIP-compressed BIN image to speed up the transfer process (1/2 size).
- The complete procedure takes less than 20 minutes with an upgraded ComPair interface:
  - About 90 seconds to erase a 4 MB flash-RAM.
  - Less than 10 minutes to transfer the file (max 1.9 MB).
  - About 5 minutes to decompress/program the flash-RAM

Note: It takes about 85 minutes with a standard interface.

Constraints:
- Needs the EPG flash memory, so this device must be placed also for non-EPG regions like Asian Pacific and United States.

Advantages:
- Flexibility.
- No change in internal ROM (IROM) required (IROM not used).
- Flexibility to change of code flash manufacturer as the "flash driver" is part of the bootstrap code (part of the main software image).

9.11.3 Concept


Data Memory Space
Code Memory Space
XRAM (2MB)
0x800000
EPG
EPG FLASH (512k)
Lower 32k of EPG flash
0x400000
OTC DRAM and SRAM
0x000000
Bootstrap
SW image (32k)
Copy
Bootstrap SW
0x3F8000
XROM-FLASH (4MB)
0x000000

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130503

Figure 9-32 Memory diagram (initial situation)

The architecture of the OTC microprocessor does not allow the execution of code from the external RAM. It is also impossible to write data in the code memory space (there is no instruction to write data to those memory locations).
The OTC normally boots from its internal ROM (IROM) but modification of the **internal** ROM software would be too expensive. Fortunately, the chip architecture allows also the booting from **external** ROM (XROM).
The IROM is mapped on the first 32 kB of the ROM address space. The XROM is mapped starting at the same address. Therefore, the lower 32 kB of XROM overlaps the IROM memory space.
Via an external pin (EA), it is possible to reveal the XROM memory below the IROM and so boot using this hidden software. This is the first trick used by the software upgrade procedure.

To be able to write to the CODE flash, it is required to address the device via the RAM address space. Today all RAM but also the EPG flash is mapped on the RAM address space. Devices are mapped to the right address space via a few control lines (kind of chip select). By exchanging the control lines between the EPG and the CODE flash, it is possible to map the CODE flash in the RAM address space and at the same time use the EPG flash to execute software. This is the second trick used by the procedure.

The main idea is to use the EPG flash to boot up the software upgrade procedure.
Therefore, the complete procedure relies on the presence of that one. The upgrade procedure is so prescribed for Europe but a small flash of 32 kB could still be used for US and AP (currently investigated).

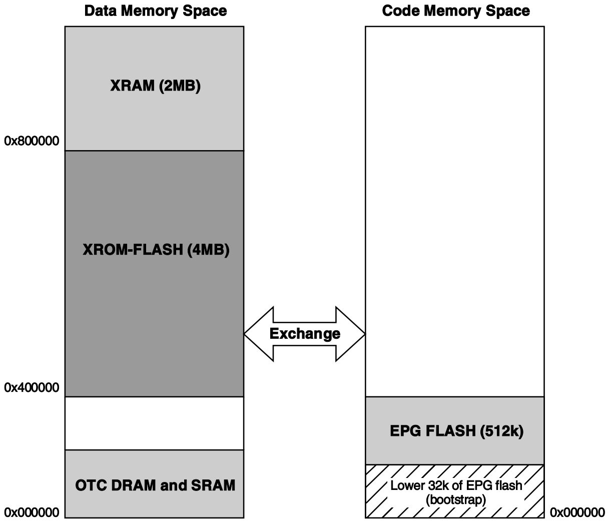
Data Memory Space
Code Memory Space
XRAM (2MB)
0x800000
XROM-FLASH (4MB)
Exchange
0x400000
OTC DRAM and SRAM
0x000000
EPG FLASH (512k)
Lower 32k of EPG flash
(bootstrap)
0x000000

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Figure 9-33 Memory diagram (after bus exchange)

In order to be able to write new software code to the set, we therefore must copy the bootstrap code to a free memory area (e.g. the EPG flash-RAM) in order to be able to execute "externally" the upgrade procedure code.
Solution: swap the software code to the data memory space (via placing a jumper on 1402) and boot from the EPG FLASH. After the zip-file uploading and (internally) software unpacking, the old situation must be restored.

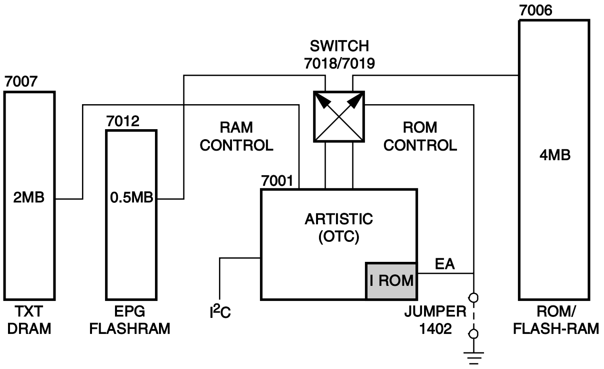
7006
SWITCH
7018/7019
7007
7012
RAM
CONTROL
ROM
CONTROL
4MB
7001
2MB
0.5MB
ARTISTIC
(OTC)
EA
I ROM
TXT
DRAM
EPG
FLASHRAM
I²C
JUMPER
1402
ROM/
FLASH-RAM

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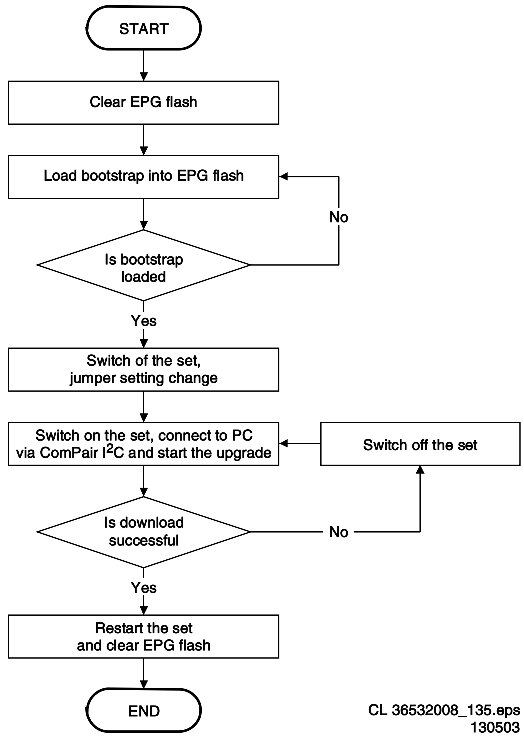
Figure 9-34 Software upgrade set-up

A jumper on the SSP will swap the devices and boot "externally" via the EPG flash. Then, via ComPair, the download command is given. The new (ZIP) image will be first downloaded to the OTC's external RAM (TXT DRAM). Then a checksum on the ZIP image will be computed on both sides and compared.
If everything is correct, the CODE flash will be erased and the new image will be transferred and unzipped (= decompressed) into the flash. This is done via the bootstrap code. A second checksum will be computed on the decompressed image.
After the upgrade, the EPG flash will be cleared again.


START
Clear EPG flash
Load bootstrap into EPG flash
Is bootstrap loaded
No
Yes
Switch of the set, jumper setting change
Switch on the set, connect to PC via ComPair I2C and start the upgrade
Switch off the set
Is download successful
No
Yes
Restart the set and clear EPG flash
END

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130503

Figure 9-35 Software upgrade flow chart

9.12 Abbreviation list

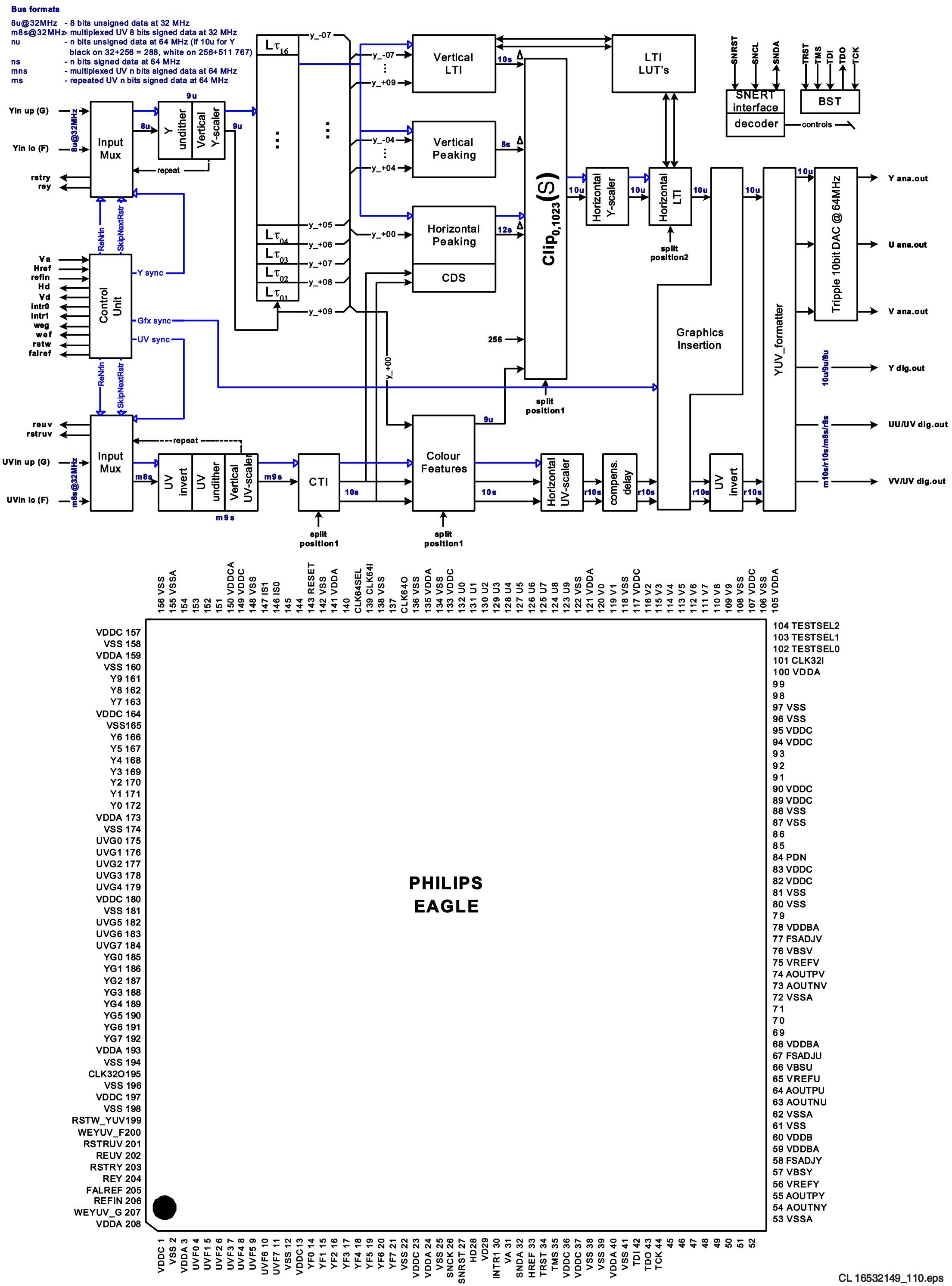
2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
AR	Aspect Ratio: 4 by 3 or 16 by 9
Artistic	See OTC 2.5: main processor
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
BC-PROT	PROTection signal to the microprocessor for a too high Beam Current.
BG	System B and G
BLC-INFO	BLack Current INFO
B-SC1-IN	Blue SCART1 IN
B-SC2-IN	Blue SCART2 IN
B-TXT	Blue TeleteXT
C	Centre channel (audio)
CL	Constant Level: audio output to connect with an external amplifier
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
CVBS-TER	CVBS TERrestrial
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DC-filament	Filament supply voltage
DFU	Directions For Use: owner's manual
DNR	Digital Noise Reduction: noise reduction feature of the set
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
DVD	Digital Video Disc
DYN-FASE-COR	DYNamic phASE CORrection: corrects the phase of the H-drive
Eagle	Feature box IC performing peaking, zooming and sub pixel LTI in both horizontal and vertical directions, CTI, and other colour features
EHT	Extra High Tension
EHT-INFO	Extra High Tension INFOrmation, used for contrast reduction, vertical and horizontal amplitude correction, beam current protection, and flash detection.
EW	East West, related to horizontal deflection of the set
EW-DRIVE	The drive signal for the EW transistor
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FALCONIC	SAA4992H, feature box IC which performs Digital Natural Motion, 3DNR vertical zoom, and vertical peaking
FBL	Fast BLanking: DC signal accompanying RGB signals
FBSCO	Fixed Beam Current Switch Off, a 140 V dip detection to activate the black switch off circuit
FBX	Feature BoX: part of the small signal board /separate module which contains 100 Hz processing, extra features and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle)
FDS	Full Dual Screen
FILAMENT	Filament of CRT
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
G-TXT	Green TeleteXT
GND-DRIVE	A separate ground for the line-drive toward the line driver
H	H_sync to the module
H_770	H_sync for 770.2 or 770.3 source
H_A50	Horizontal Acquisition 1fH: horizontal sync pulse coming out of the HIP
H_D100	Horizontal Drive 2fH: horizontal sync pulse coming out of the feature-box
HD at HOME	A signal from the OTC, to switch the HOP to the Pixel Plus standard (60 Hz frame)

H-DVI	H_sync from DVI to RGB converter chip
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
HIP	High-end video Input Processor (TDA9320): video and chroma decoder.
HOP	High-end video Output Processor (TDA9330): video, sync, and geometry controller
H_OUT	H_sync output of the module
HP	HeadPhone
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker
IROM	Internal ROM (inside uP)
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
LCD	Liquid Crystal Display
LDP	Line Deflection Protection signal, derived from the EW current and voltage
LED	Light Emitting Diode
LINE-DRIVE	LINE DRIVE signal (for the Line transistor)
LNA	Low Noise Adapter / Low Noise Amplifier
LO	Local Oscillator
Ls, Rs	Left surround and Right surround channel (audio)
LSP	Large Signal Panel
Lt, Rt	Left total and Right total in case of a Dolby ProLogic encoded signal (audio)
MPX	MultiPleX
MSP	Multi-standard Sound Processor: ITT sound decoder
MUTE	MUTE Line
NC	Not Connected
NVM	Non Volatile Memory: IC containing TV related data such as alignments
O/C	Open Circuit
OSD	On Screen Display
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
OTP	One Time Programmable
P50	Project 50: communication protocol between TV and peripherals
PA	Power Amplifier
PCB	Printed Circuit Board
PICNIC	Peripheral Integrated Combined Network IC (SAA4978): main IC for 100 Hz features and feature processing
PIP	Picture In Picture
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating double vertical resolution.
PTP	Picture Tube Panel
PWM	Pulse Width Modulation
RAM	Random Access Memory
R-TXT	Red TeleteXT
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RDS	Radio Data System
RESET	RESET signal
ROM	Read Only Memory
SAM	Service Alignment Mode
S	Surround channel or mono surround channel (audio)
SC	SandCastle: two-level pulse derived from sync signals
S/C	Short Circuit
SCAVEM	SCAn VElocity Modulation
SCL-F	CLock Signal on Fast I2C bus
SD	Standard Definition
SDA-F	DAta Signal on Fast I2C bus
SIF	Sound Intermediate Frequency
SNERT	Synchronous No parity Eight bit Reception and Transmit
SPDIF	Sony Philips Digital Interface
SSP	Small Signal Panel
STBY	STandBY
SW	SubWoofer
TXT	TeleteXT
UART	Universal Asynchronous Receiver Transmitter
uP	Microprocessor
U_100	U from Feature Box
V_100	V from Feature Box
V_A50	Vertical Acquisition 1fH
V_BAT	Main supply for deflection (usually 141 V)
V_D100	Vertical Drive 2fH: vertical sync pulse from deflection
V_DPOS	One of the symmetrical drive signals for the DC frame output stage.
V_DNEG	One of the symmetrical drive signals for the DC frame output stage.
VFB	Vertical Flyback Pulse: vertical sync pulse coming from the feature box
VL	Variable Level out: processed audio output toward external amplifier
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
X-RAY-PROT	A PROTection signal against excessive X-RAY radiation
XROM	External ROM (outside uP)
XTAL	Quartz crystal
Y_100	Y from Feature Box
Y-G	Luminance or Green signal with sync
Y_OUT	Luminance-signal to HOP IC
YUV-Feat	The YUV input for the main picture, coming from the Feature box or the HIP
V	V_sync to the module

9.13 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.13.1 Diagram B3C, T8F24EF (IC7724)


Bus formats
8u@32MHz - 8 bits unsigned data at 32 MHz
m8s@32MHz- multiplexed UV 8 bits signed data at 32 MHz
nu - n bits unsigned data at 64 MHz (if 10u for Y black on 32+256 = 288, white on 256+511 767)
ns - n bits signed data at 64 MHz
mns - multiplexed UV n bits signed data at 64 MHz
ms - repeated UV n bits signed data at 64 MHz
Yin up (G)
Yin lo (F)
8u@32MHz
Input Mux
rstry
rey
8u
Y undither
Vertical Y-scaler
9u
repeat
ReNrin
SkipNextRstr
Va
Href
refin
Hd
Vd
intr0
intr1
weg
wef
rstw
falref
Control Unit
Y sync
Gfx sync
UV sync
reuv
rstruv
UVin up (G)
UVin lo (F)
m8s@32MHz
Input Mux
m8s
UV invert
UV undither
Vertical UV-scaler
m9s
CTI
10s
split position1
Colour Features
split position1
9u
Lτ16
Lτ04
Lτ03
Lτ02
Lτ01
y_-07
y_+09
y_-04
y_+04
y_+05
y_+06
y_+07
y_+08
y_+00
Vertical LTI
Vertical Peaking
Horizontal Peaking
CDS
10s
8s
12s
Δ
Clip0,1023(S)
256
split position1
LTI LUT's
Horizontal Y-scaler
Horizontal LTI
split position2
10u
Graphics Insertion
Horizontal UV-scaler
compens. delay
r10s
UV invert
YUV_formatter
Tripple 10bit DAC @ 64MHz
SNRST
SNCL
SNDA
SNERT interface
decoder
TRST
TMS
TDI
TDO
TCK
BST
controls
Y ana.out
U ana.out
V ana.out
10u/9u/8u
Y dig.out
m10s/r10s/m8s/8s
UU/UV dig.out
VV/UV dig.out
156 VSS
155 VSSA
154
153
152
151
150 VDDCA
149 VDDC
148 VSS
147 IS1
146 IS0
145
144
143 RESET
142 VSS
141 VDDA
140
CLK64SEL
139 CLK64I
138 VSS
137
CLK64O
136 VSS
135 VDDA
134 VSS
133 VDDC
132 U0
131 U1
130 U2
129 U3
128 U4
127 U5
126 U6
125 U7
124 U8
123 U9
122 VSS
121 VDDA
120 V0
119 V1
118 VSS
117 VDDC
116 V2
115 V3
114 V4
113 V5
112 V6
111 V7
110 V8
109 V9
108 VSS
107 VDDC
106 VSS
105 VDDA
VDDC 157
VSS 158
VDDA 159
VSS 160
Y9 161
Y8 162
Y7 163
VDDC 164
VSS165
Y6 166
Y5 167
Y4 168
Y3 169
Y2 170
Y1 171
Y0 172
VDDA 173
VSS 174
UVG0 175
UVG1 176
UVG2 177
UVG3 178
UVG4 179
VDDC 180
VSS 181
UVG5 182
UVG6 183
UVG7 184
YG0 185
YG1 186
YG2 187
YG3 188
YG4 189
YG5 190
YG6 191
YG7 192
VDDA 193
VSS 194
CLK32O195
VSS 196
VDDC 197
VSS 198
RSTW_YUV199
WEYUV_F200
RSTRUV 201
REUV 202
RSTRY 203
REY 204
FALREF 205
REFIN 206
WEYUV_G 207
VDDA 208
PHILIPS
EAGLE
104 TESTSEL2
103 TESTSEL1
102 TESTSEL0
101 CLK32I
100 VDDA
99
98
97 VSS
96 VSS
95 VDDC
94 VDDC
93
92
91
90 VDDC
89 VDDC
88 VSS
87 VSS
86
85
84 PDN
83 VDDC
82 VDDC
81 VSS
80 VSS
79
78 VDDBA
77 FSADJV
76 VBSV
75 VREFV
74 AOUTPV
73 AOUTNV
72 VSSA
71
70
69
68 VDDBA
67 FSADJU
66 VBSU
65 VREFU
64 AOUTPU
63 AOUTNU
62 VSSA
61 VSS
60 VDDB
59 VDDBA
58 FSADJY
57 VBSY
56 VREFY
55 AOUTPY
54 AOUTNY
53 VSSA
VDDC 1
VSS 2
VDDA 3
UVF0 4
UVF1 5
UVF2 6
UVF3 7
UVF4 8
UVF5 9
UVF6 10
UVF7 11
VSS 12
VDDC13
YF0 14
YF1 15
YF2 16
YF3 17
YF4 18
YF5 19
YF6 20
YF7 21
VSS 22
VDDC 23
VDDA 24
VSS 25
SNCK 26
SNRST 27
HD28
VD29
INTR1 30
VA 31
SNDA 32
HREF 33
TRST 34
TMS 35
VDDC 36
VDDC 37
VSS 38
VSS 39
VDDA 40
VSS 41
TDI 42
TDO 43
TCK 44
45
46
47
48
49
50
51
52

CL 16532149_110.eps
201201

Figure 9-36 Internal Block Diagram and Pin Layout

9.13.2 Diagram B6B, MAS3528E (IC7A30)

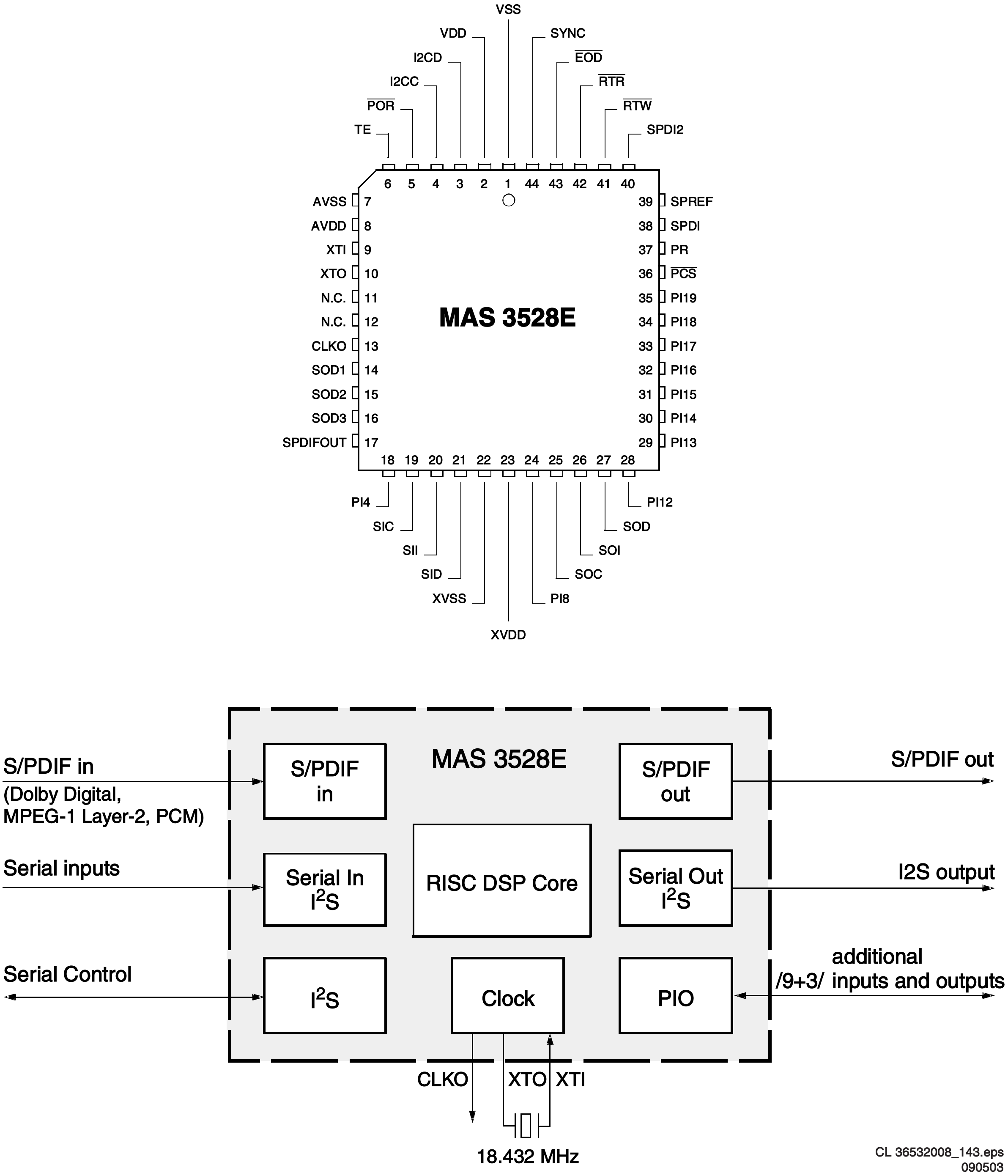

VSS
VDD
SYNC
I2CD
EOD
I2CC
RTR
POR
RTW
TE
SPDI2
6 5 4 3 2 1 44 43 42 41 40
AVSS 7
AVDD 8
XTI 9
XTO 10
N.C. 11
N.C. 12
CLKO 13
SOD1 14
SOD2 15
SOD3 16
SPDIFOUT 17
39 SPREF
38 SPDI
37 PR
36 PCS
35 PI19
34 PI18
33 PI17
32 PI16
31 PI15
30 PI14
29 PI13
MAS 3528E
18 19 20 21 22 23 24 25 26 27 28
PI4
SIC
SII
SID
XVSS
XVDD
PI12
SOD
SOI
SOC
PI8
S/PDIF in
(Dolby Digital, MPEG-1 Layer-2, PCM)
Serial inputs
Serial Control
S/PDIF in
Serial In I2S
I2S
MAS 3528E
RISC DSP Core
Clock
S/PDIF out
Serial Out I2S
PIO
S/PDIF out
I2S output
additional /9+3/ inputs and outputs
CLKO
XTO
XTI
18.432 MHz

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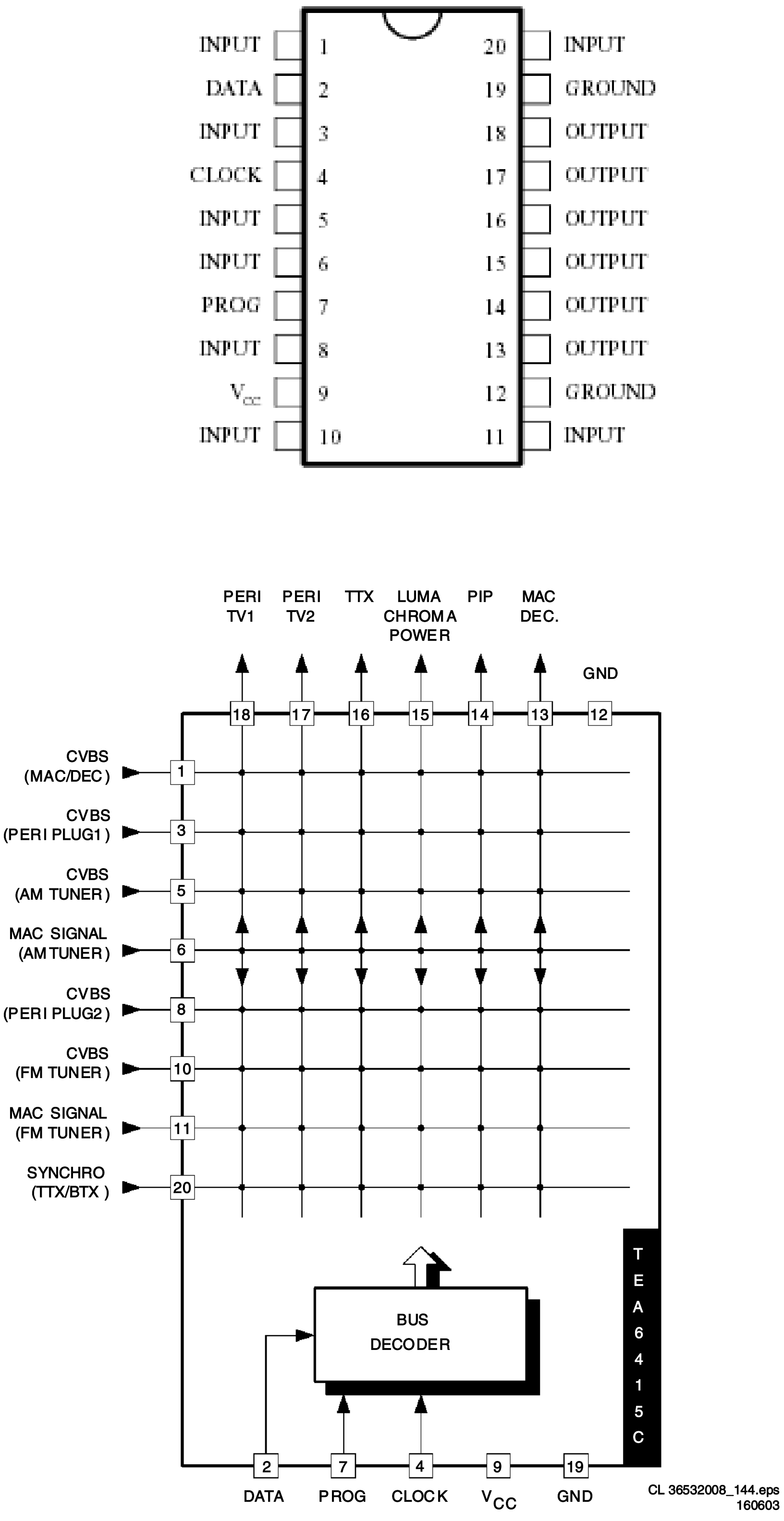
Figure 9-37 Internal Block Diagram and Pin Layout

9.13.3 Diagram B14A, TEA6415 (IC7I24)


INPUT 1
DATA 2
INPUT 3
CLOCK 4
INPUT 5
INPUT 6
PROG 7
INPUT 8
VCC 9
INPUT 10
20 INPUT
19 GROUND
18 OUTPUT
17 OUTPUT
16 OUTPUT
15 OUTPUT
14 OUTPUT
13 OUTPUT
12 GROUND
11 INPUT
PERI TV1
PERI TV2
TTX
LUMA CHROMA POWER
PIP
MAC DEC.
GND
18
17
16
15
14
13
12
CVBS (MAC/DEC) 1
CVBS (PERI PLUG1) 3
CVBS (AM TUNER) 5
MAC SIGNAL (AM TUNER) 6
CVBS (PERI PLUG2) 8
CVBS (FM TUNER) 10
MAC SIGNAL (FM TUNER) 11
SYNCHRO (TTX/BTX) 20
BUS DECODER
TEA6415C
2 DATA
7 PROG
4 CLOCK
9 VCC
19 GND

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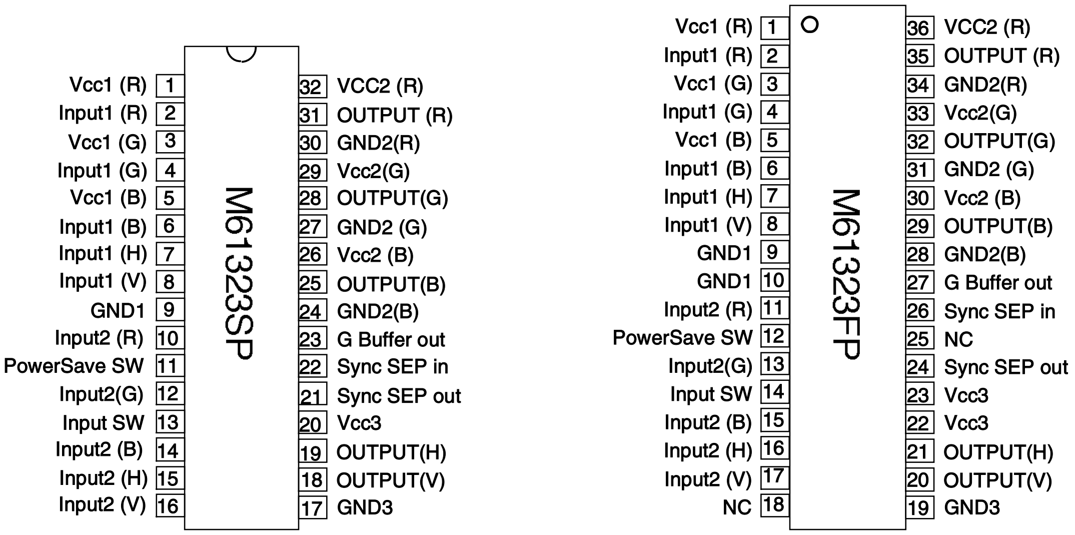
160603

Figure 9-38 Internal Block Diagram and Pin Layout

9.13.4 Diagram B14C, M61323 (IC7I42)


PIN CONFIGURATION(TOP VIEW)

OUTLINE:32P4B

PIN CONFIGURATION(TOP VIEW)

OUTLINE:36P2R
M61323SP
Vcc1 (R) 1
Input1 (R) 2
Vcc1 (G) 3
Input1 (G) 4
Vcc1 (B) 5
Input1 (B) 6
Input1 (H) 7
Input1 (V) 8
GND1 9
Input2 (R) 10
PowerSave SW 11
Input2(G) 12
Input SW 13
Input2 (B) 14
Input2 (H) 15
Input2 (V) 16
32 VCC2 (R)
31 OUTPUT (R)
30 GND2(R)
29 Vcc2(G)
28 OUTPUT(G)
27 GND2 (G)
26 Vcc2 (B)
25 OUTPUT(B)
24 GND2(B)
23 G Buffer out
22 Sync SEP in
21 Sync SEP out
20 Vcc3
19 OUTPUT(H)
18 OUTPUT(V)
17 GND3
M61323FP
Vcc1 (R) 1
Input1 (R) 2
Vcc1 (G) 3
Input1 (G) 4
Vcc1 (B) 5
Input1 (B) 6
Input1 (H) 7
Input1 (V) 8
GND1 9
GND1 10
Input2 (R) 11
PowerSave SW 12
Input2(G) 13
Input SW 14
Input2 (B) 15
Input2 (H) 16
Input2 (V) 17
NC 18
36 VCC2 (R)
35 OUTPUT (R)
34 GND2(R)
33 Vcc2(G)
32 OUTPUT(G)
31 GND2 (G)
30 Vcc2 (B)
29 OUTPUT(B)
28 GND2(B)
27 G Buffer out
26 Sync SEP in
25 NC
24 Sync SEP out
23 Vcc3
22 Vcc3
21 OUTPUT(H)
20 OUTPUT(V)
19 GND3

BLOCK DIAGRAM (M61323SP)

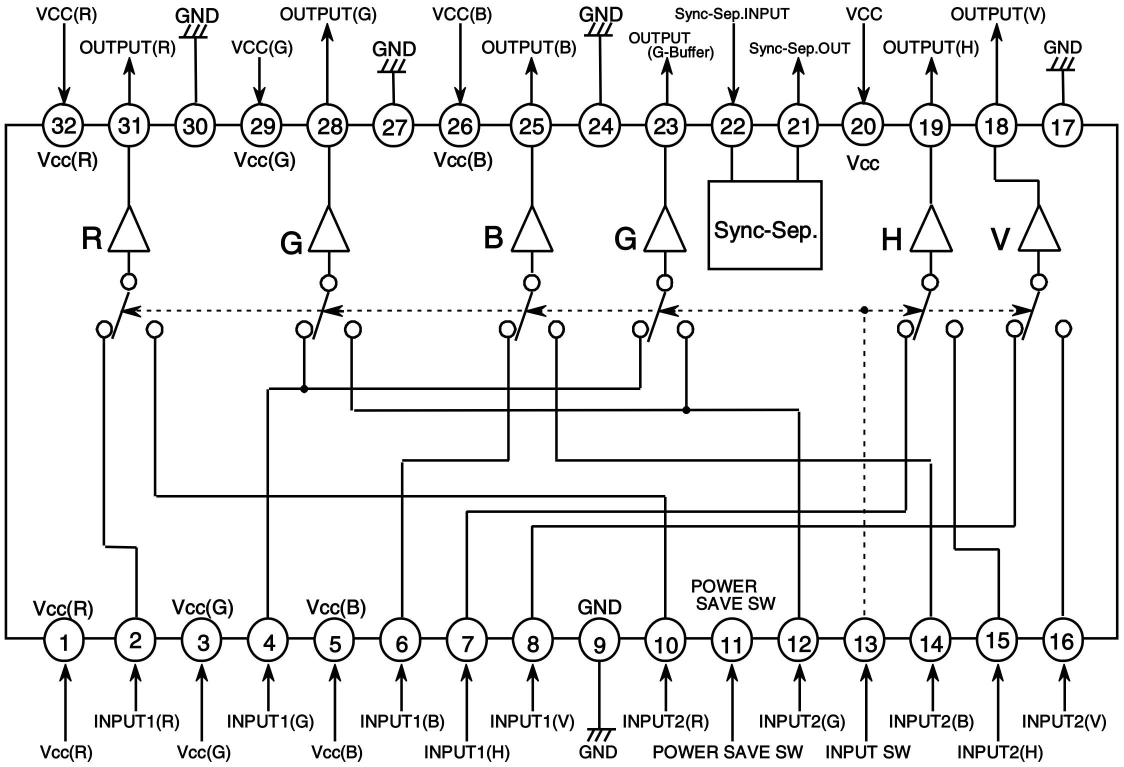

VCC(R)
OUTPUT(R)
GND
VCC(G)
OUTPUT(G)
GND
VCC(B)
OUTPUT(B)
GND
OUTPUT (G-Buffer)
Sync-Sep.INPUT
Sync-Sep.OUT
VCC
OUTPUT(H)
OUTPUT(V)
GND
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
Vcc(R)
Vcc(G)
Vcc(B)
Vcc
R
G
B
G
Sync-Sep.
H
V
Vcc(R)
Vcc(G)
Vcc(B)
GND
POWER SAVE SW
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Vcc(R)
INPUT1(R)
Vcc(G)
INPUT1(G)
Vcc(B)
INPUT1(B)
INPUT1(H)
INPUT1(V)
GND
INPUT2(R)
POWER SAVE SW
INPUT2(G)
INPUT SW
INPUT2(B)
INPUT2(H)
INPUT2(V)

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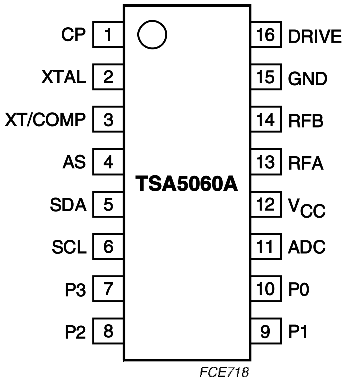
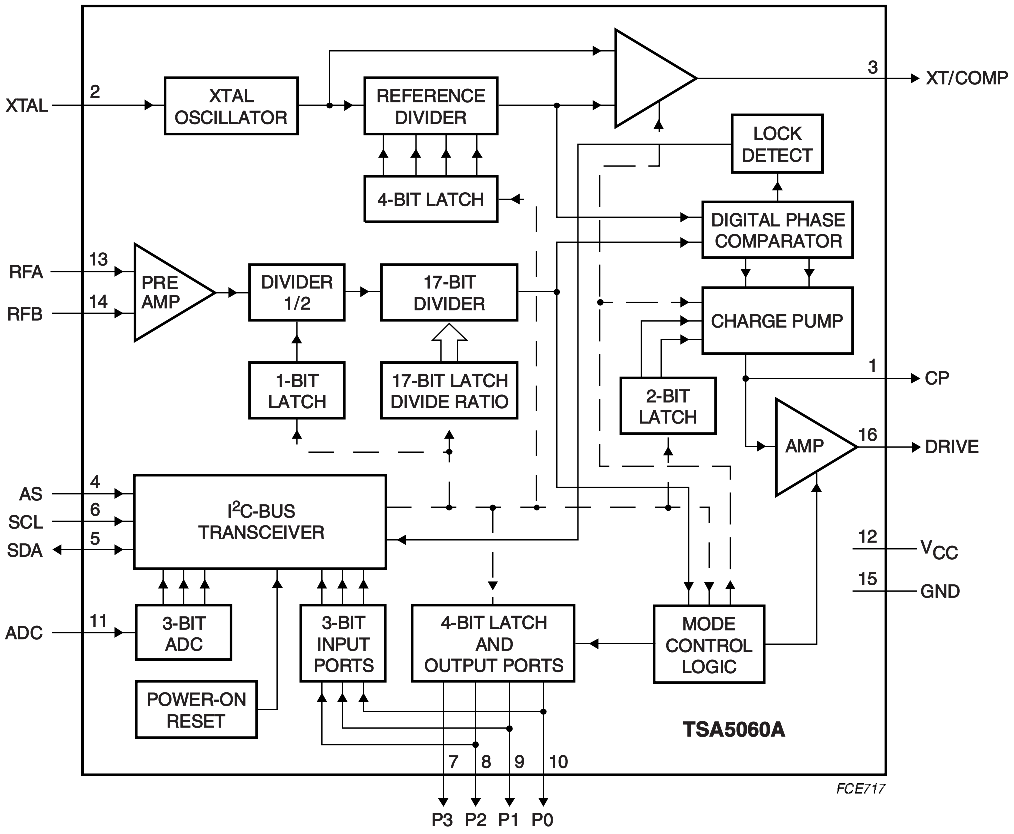
Figure 9-39 Internal Block Diagram and Pin Layout

9.13.5 Diagram R, TSA5060ATS (IC7101)

Pin configuration.


CP 1
XTAL 2
XT/COMP 3
AS 4
SDA 5
SCL 6
P3 7
P2 8
TSA5060A
16 DRIVE
15 GND
14 RFB
13 RFA
12 V_{CC}
11 ADC
10 P0
9 P1
FCE718

BLOCK DIAGRAM


XTAL 2
XTAL OSCILLATOR
REFERENCE DIVIDER
4-BIT LATCH
3 XT/COMP
LOCK DETECT
DIGITAL PHASE COMPARATOR
RFA 13
RFB 14
PRE AMP
DIVIDER 1/2
17-BIT DIVIDER
1-BIT LATCH
17-BIT LATCH DIVIDE RATIO
CHARGE PUMP
2-BIT LATCH
1 CP
AMP
16 DRIVE
AS 4
SCL 6
SDA 5
I²C-BUS TRANSCEIVER
12 V_{CC}
15 GND
ADC 11
3-BIT ADC
3-BIT INPUT PORTS
4-BIT LATCH AND OUTPUT PORTS
MODE CONTROL LOGIC
POWER-ON RESET
TSA5060A
7 8 9 10
P3 P2 P1 P0
FCE717

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090503

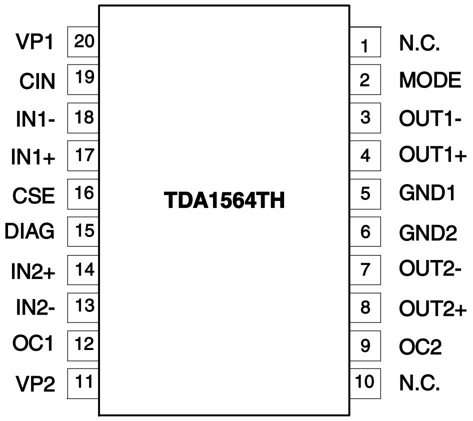
Figure 9-40 Internal Block Diagram and Pin Layout

9.13.6 Diagram W, TDA1564 (IC7101)

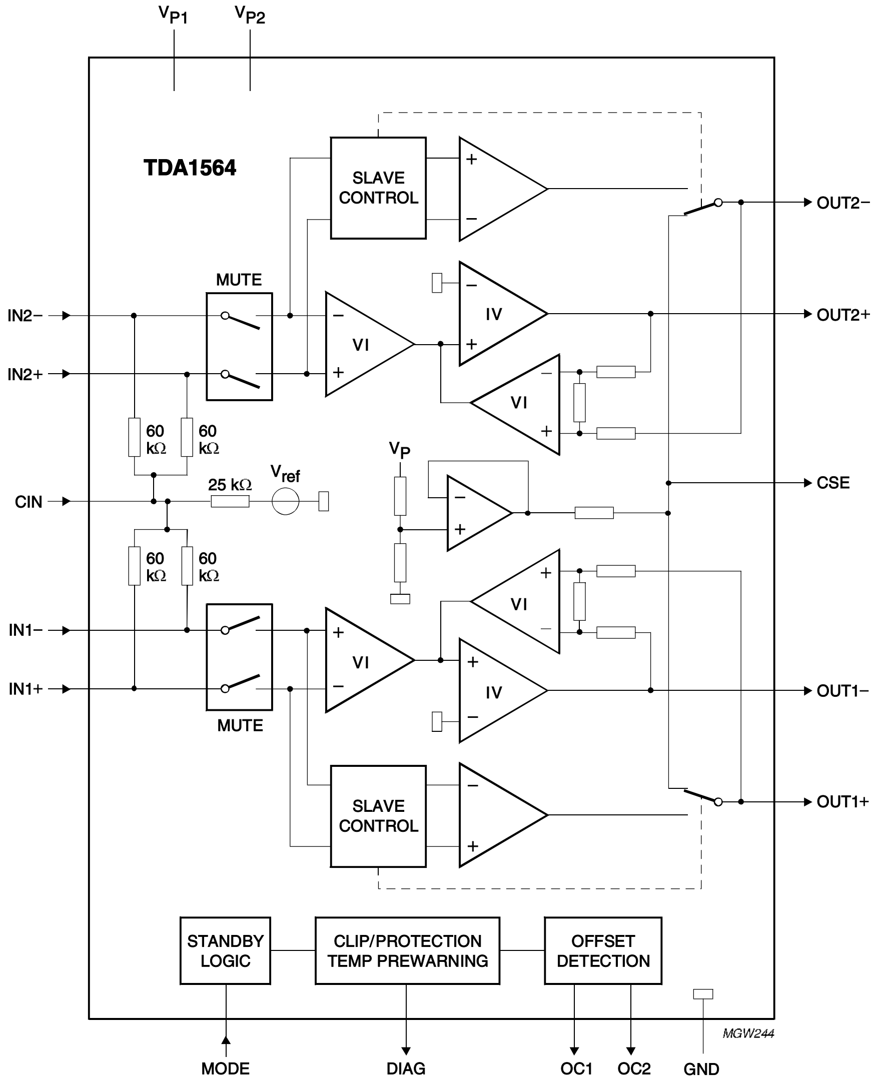
PINNING

SYMBOL	PIN	DESCRIPTION
n.c.	1	not connected
MODE	2	mute/standby/operating
OUT1-	3	inverting output 1
OUT1+	4	non-inverting output 1
GND1	5	ground 1
GND2	6	ground 2
OUT2-	7	inverting output 2
OUT2+	8	non-inverting output 2
OC2	9	offset capacitor 2
n.c.	10	not connected
VP2	11	supply voltage 2
OC1	12	offset capacitor 1
IN2-	13	inverting input 2
IN2+	14	non-inverting input 2
DIAG	15	diagnostic
CSE	16	electrolytic capacitor for SE mode
IN1+	17	non-inverting input 1
IN1-	18	inverting input 1
CIN	19	common input
VP1	20	supply voltage 1

PIN CONFIGURATION.


TDA1564TH
VP1 20
CIN 19
IN1- 18
IN1+ 17
CSE 16
DIAG 15
IN2+ 14
IN2- 13
OC1 12
VP2 11
1 N.C.
2 MODE
3 OUT1-
4 OUT1+
5 GND1
6 GND2
7 OUT2-
8 OUT2+
9 OC2
10 N.C.

BLOCK DIAGRAM

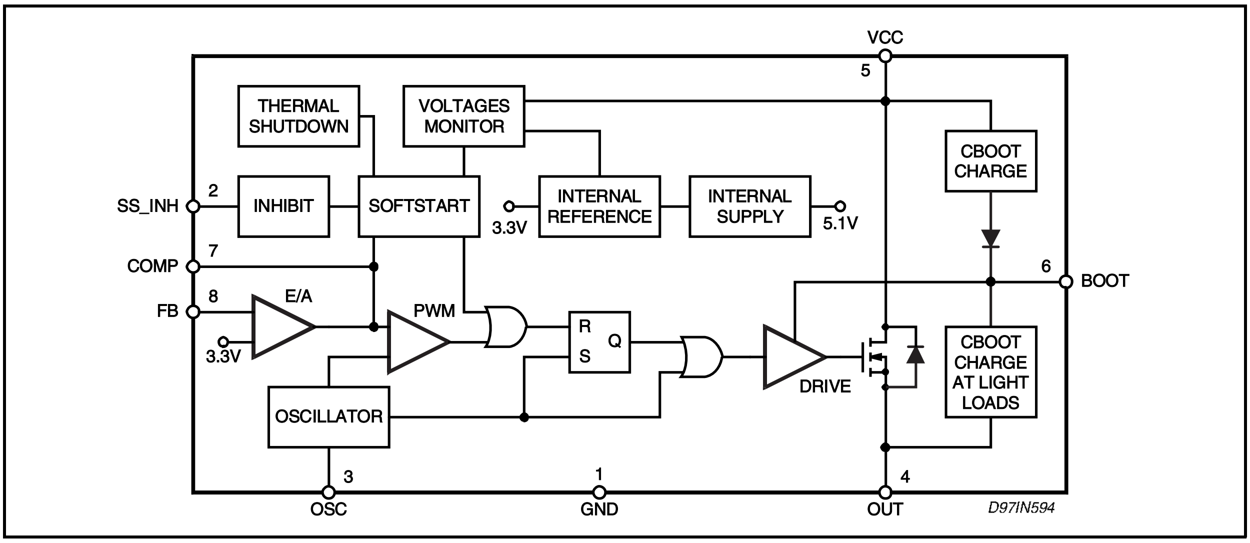

V_P1
V_P2
TDA1564
SLAVE CONTROL
MUTE
IN2−
IN2+
VI
IV
VI
60 kΩ
60 kΩ
25 kΩ
V_ref
V_P
CIN
60 kΩ
60 kΩ
IN1−
IN1+
VI
IV
VI
MUTE
SLAVE CONTROL
OUT2−
OUT2+
CSE
OUT1−
OUT1+
STANDBY LOGIC
CLIP/PROTECTION TEMP PREWARNING
OFFSET DETECTION
MGW244
MODE
DIAG
OC1
OC2
GND

CL 36532008_147.eps
140503

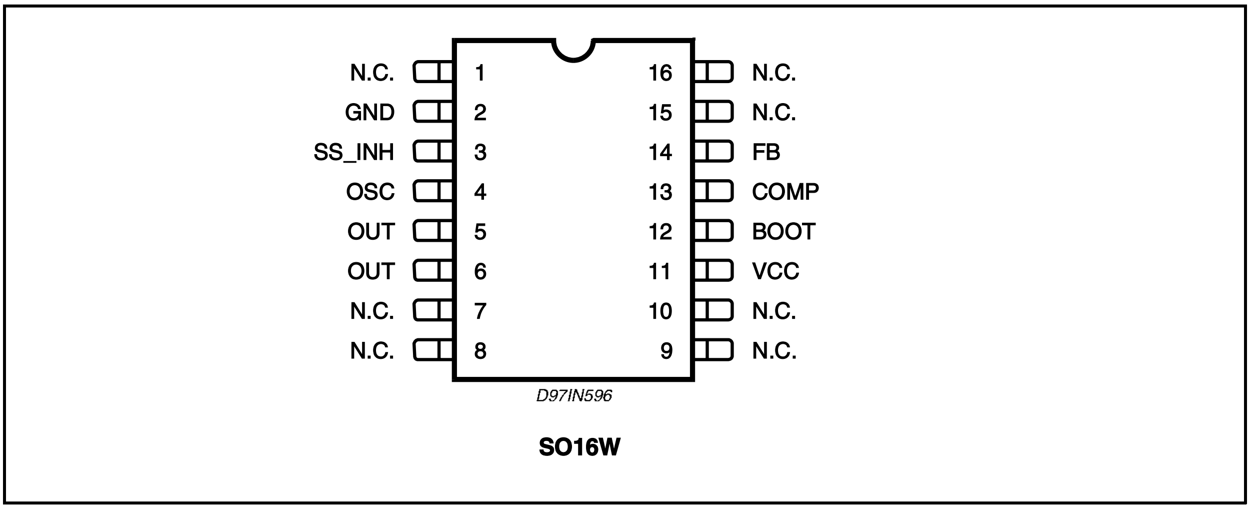
Figure 9-41 Internal Block Diagram and Pin Layout

9.13.7 Diagram T4, L4978D (IC7400)

BLOCK DIAGRAM


VCC
5
THERMAL SHUTDOWN
VOLTAGES MONITOR
CBOOT CHARGE
SS_INH
2
INHIBIT
SOFTSTART
3.3V
INTERNAL REFERENCE
INTERNAL SUPPLY
5.1V
COMP
7
6
BOOT
FB
8
E/A
3.3V
PWM
R
S
Q
DRIVE
CBOOT CHARGE AT LIGHT LOADS
OSCILLATOR
3
1
4
OSC
GND
OUT
D97IN594

PIN CONNECTIONS


N.C. 1
GND 2
SS_INH 3
OSC 4
OUT 5
OUT 6
N.C. 7
N.C. 8
16 N.C.
15 N.C.
14 FB
13 COMP
12 BOOT
11 VCC
10 N.C.
9 N.C.
D97IN596
SO16W

PIN FUNCTIONS

SO (*)	Name	Function
2	GND	Ground
3	SS_INH	A logic signal (active low) disables the device (sleep mode operation). A capacitor connected between this pin and ground determines the soft start time. When this pin is grounded disables the device (driven by open collector/drain).
4	OSC	An external resistor connected between the unregulated input voltage and this pin and a capacitor connected from this pin to ground fix the switching frequency. (Line feed forward is automatically obtained)
5, 6	OUT	Stepdown regulator output
1	V_{CC}	Unregulated DC input voltage
12	BOOT	A capacitor connected between this pin and OUT allows to drive the internal DMOS Transistors
13	COMP	E/A output to be used for frequency compensation
14	FB	Stepdown feedback input. Connecting directly to this pin results in an output voltage of 3.3V. An external resistive divider is required for higher output voltages.

(*) Pins 1, 7, 8, 9, 10, 15 and 16 are not internally, electrically connected to the die.

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100603

Figure 9-42 Internal Block Diagram and Pin Layout

10. Spare Parts List

Large Signal Panel [A]

Various

0010	4822 256 91879	Plastic holder
0011	3104 308 78231	Transistor cooling clip
0020	4822 492 70789	Transistor clamp
0030	3104 304 23001	LSP chassisframe
0037	3104 304 24131	LOT bracket
0050	4822 466 93461	Insulating plate 20 X 25
0051	4822 466 93461	Insulating plate 20 X 25
0052	3104 301 24181	Spring for Bracket
0054	3104 301 24181	Spring for Bracket
0056	3104 301 24181	Spring for Bracket
0060	3104 301 24181	Spring for Bracket
0065	3104 304 22031	LOT spacer
0066	3104 301 24181	Spring for Bracket
0067	3104 304 24921	Connecting part EMG2
0080	4822 492 70789	Transistor clamp
0320	4822 255 41371	Transistor clamp
0341	4822 492 63524	Transistor clamp
0395	4822 492 70789	Transistor clamp
0396	4822 492 70789	Transistor clamp
0505	4822 492 62076	Transistor clamp
1146	3104 311 00091	Cable 5P/560/5P
1147	4822 267 10637	Connector 5P m v 2.00
1205	2422 025 17682	Connector 40p M
1206	2422 025 17682	Connector 40p M
1417	4822 265 20723	Connector 2p m
1424	2422 025 11244	Connector 7p m
1491	4822 267 10973	Connector 1P m
1492	4822 267 10735	Connector 3p m
1498	2422 025 04849	Connector 2p m
1499	2422 025 04849	Connector 2p m
1501▲	4822 070 35002	Fuse 5A
1502	4822 267 10774	2P male red
1503▲	4822 070 14002	Fuse 4A
1505	2422 025 16374	Connector 2p m
1510	4822 267 10973	Connector 1P m
1511	4822 265 11253	Fuse holder 2p
1512	4822 265 11253	Fuse holder 2p
1520	3104 301 24181	Spring for Bracket
1521	3104 301 24181	Spring for Bracket
1550▲	2422 132 07411	Relay 1P 5V 5A
1590	4822 252 60151	Sparkgap dsp501
1601▲	2422 086 10919	Fuse 65V 125mA
1620	4822 267 10735	Connector 3p m
1625	2422 025 16382	Connector 3p m
1693	4822 267 10676	Connector 1P
1735	4822 267 10565	Connector 4p
1737	2422 025 16382	Connector 3p m
1738	2422 025 16383	Connector 3p m
1930▲	4822 252 51173	Fuse 1,0A
1936	2422 025 12485	Connector 11p m
1940	2422 025 12485	Connector 11p m
1943	4822 267 10748	Connector 3p m
1945	4822 267 10735	Connector 3p m
1946	4822 265 41391	Connector 9p m
1952	4822 267 10637	Connector 5P m v 2.00
1953	4822 267 10734	Connector 5p m
1955	4822 267 10735	Connector 3p m
1968▲	4822 252 51186	Fuse 2A
8000	3104 311 03272	EHT cable 640 mm
8147	3104 311 03221	Cable 5P/400/5P
8193▲	4822 320 20216	Focus cable 364 mm
8194▲	4822 320 20189	Cable HT-focus 44cm Rd
8400	2422 025 16691	Connector 3P male
8417	3104 311 04561	Cable 2P3/400/2P3
8424	3104 311 02991	Cable 7P/560/7P Wh
8498	3104 311 04531	Cable 2P/400/2P
8625	3104 311 04741	Cable 3P/180/3P
8737	3104 311 04682	Cable 2P3/680/2XPOSI
8940	3104 311 04651	Cable 11P/140/11P

⊣⊢

2100	4822 126 13841	1nF 20% 250V
2101	2222 370 65102	1nF 10% 400V
2102	4822 124 40207	100µF 20% 25V
2103	2020 552 94427	100pF 5% 50v 0603
2104	4822 122 31175	1nF 10% 500V
2105	2020 552 94427	100pF 5% 50v 0603
2106▲	4822 126 14152	680pF 10% 1kV
2107	4822 126 13599	3.3nF 10% 500V
2108	4822 121 70162	10nF 5% 400V
2109	4822 126 14472	1µF 10% 10V 0805
2110	4822 126 14472	1µF 10% 10V 0805
2111	4822 121 43526	47nF 5% 250V
2112	5322 126 11583	10nF 10% 50V 0603
2113	4822 126 10206	2.2nF 10% 500V
2113	4822 126 13599	3.3nF 10% 500V
2114	4822 121 10711	100nF 20% 275V
2115	4822 124 40764	22µF 100 V
2117	2020 021 91506	1000µF 20% 16V
2118	2020 021 91795	680µF 20% 25V
2119	2020 021 91794	1000µF 20% 16V
2121	4822 121 41856	22nF 5% 250V
2122	4822 121 41856	22nF 5% 250V
2123	2238 586 59812	100nF 20-80% 50V 0603
2124	4822 124 40248	10µF 20% 63V
2129	5322 126 11578	1nF 10% 50V 0603
2131	2238 916 15641	22nF 10% 25V 0603
2140	4822 124 40248	10µF 20% 63V
2141	4822 122 33177	10nF 20% 50V
2143	4822 122 31175	1nF 10% 500V
2144	4822 126 14472	1µF 10% 10V 0805
2145	4822 126 13881	470pF 5% 50V
2147	4822 124 41407	0.47µF 20% 63V
2149	4822 126 14472	1µF 10% 10V 0805
2150	5322 126 11583	10nF 10% 50V 0603
2152	4822 121 70162	10nF 5% 400V
2153	5322 122 31866	6.8nF 10% 63V
2154	3198 017 31530	15nF 20% 50V 0603
2155	4822 126 14585	100nF 10% 50V
2156	5322 126 11583	10nF 10% 50V 0603
2157	4822 121 42687	3.3nF 10% 63V
2159	4822 126 13881	470pF 5% 50V
2160	4822 124 21913	1µF 20% 63V
2161	5322 126 11583	10nF 10% 50V 0603
2162	4822 126 13881	470pF 5% 50V
2163	4822 124 40207	100µF 20% 25V
2400	4822 124 11575	47µF 20% 160V
2401	4822 121 42077	6.8nF 10% 400V
2402	2020 012 93596	22µF 20% 250V
2403	2238 916 15641	22nF 10% 25V 0603
2404	2238 916 15641	22nF 10% 25V 0603
2412	3198 024 44730	47nF 50V 0603
2413	4822 124 12255	10µF 20% 50V
2414	3198 024 44730	47nF 50V 0603
2415	4822 126 13883	220pF 5% 50V
2417	4822 126 14076	220nF 25V. 20%
2419▲	4822 126 14237	470pF 10% 2kV
2420▲	4822 121 70595	1.2nF 5% 2kV
2421	2038 301 00312	1.2µF 5% 250V
2425▲	4822 121 10526	9.1nF 5% 2kV
2426	4822 121 10658	24nF 5% 630V
2430	4822 126 10206	2.2nF 10% 500V
2431	4822 126 10206	2.2nF 10% 500V
2433	2022 333 00086	470nF 5% 250V
2440	2020 552 96448	1µF 10% 16V
2441	5322 122 32654	22nF 10% 63V
2442	5322 122 31866	6.8nF 10% 63V
2443	9965 000 09661	470pF 50V 10%
2445	5322 122 32654	22nF 10% 63V
2448	5322 122 32268	470pF 5% 63V
2450	4822 121 40434	330nF 10% 100V
2451	2020 012 93757	1000µF 20% 10V
2454	3198 017 31530	15nF 20% 50V 0603
2455	5322 126 11578	1nF 10% 50V 0603
2457	2020 552 96699	15nF 5% 25V
2458	4822 126 14241	330pF 50V 0603
2459	3198 016 31020	1nF 10% 25V 0603
2460	4822 124 81144	1000µF 16V
2461	4822 122 31169	1.5nF 10% 500V
2462	4822 124 80061	1000µF 20% 25V
2463	4822 122 31177	470pF 10% 500V
2464	4822 124 80061	1000µF 20% 25V
2465	4822 122 31177	470pF 10% 500V
2466	2238 586 59812	100nF 20-80% 50V 0603
2468▲	4822 122 50116	470pF 10% 1kV
2480	5322 126 11582	6.8nF 10% 63V
2482	3198 017 34730	47nF 16V 0603
2489	2222 580 16638	68nF 10% 50V
2490	4822 124 23432	100µF 20% 10V
2491	4822 124 81151	22µF 50V
2492	4822 124 23432	100µF 20% 10V
2493	4822 122 33891	3.3nF 10% 63V
2494	2238 780 15654	220nF 10% 16V
2495	2238 780 15654	220nF 10% 16V
2496	4822 122 33177	10nF 20% 50V
2497	4822 126 12105	33nF 5% 50V
2498	2020 552 96448	1µF 10% 16V
2499	5322 126 11579	3.3nF 10% 63V
2501▲	4822 126 14053	1nF 10% 2kV
2503	4822 121 51472	39nF 5% 250V
2504	2238 916 15641	22nF 10% 25V 0603
2505	2020 554 90173	2.2nF 20% 250V
2506	4822 121 43526	47nF 5% 250V
2507	4822 126 13589	470nF 275V
2508	4822 124 11913	22nF 20% 275V
2509	4822 124 11913	22nF 20% 275V
2510▲	4822 126 12263	220pF 10% 2kV
2511	4822 124 12417	2200µF 20% 25V
2512	4822 124 12417	2200µF 20% 25V
2513	4822 126 13881	470pF 5% 50V
2514	4822 126 14238	2.2nF 50V 0603
2515	4822 124 80096	47µF 200V
2516	2020 024 90743	220µF 20% 400V
2516	4822 124 12415	220µF 20% 400V
2517	4822 121 70162	10nF 5% 400V
2518	4822 126 13597	330pF 10% 500V
2520	4822 121 10711	100nF 20% 275V
2525	4822 126 14247	1.5nF 50V 0603
2526▲	2020 558 90571	2.2nF 10% 1kV
2527▲	4822 126 14237	470pF 10% 2kV
2528	4822 126 14472	1µF 10% 10V 0805
2530	4822 126 14472	1µF 10% 10V 0805
2531	4822 122 31169	1.5nF 10% 500V
2532	4822 126 14472	1µF 10% 10V 0805
2535	4822 126 13193	4.7nF 10% 63V
2537	4822 124 11913	22nF 20% 275V
2538	4822 122 33177	10nF 20% 50V
2539	4822 124 40248	10µF 20% 63V
2540	4822 124 21913	1µF 20% 63V
2541	4822 126 13597	330pF 10% 500V
2542	4822 124 12284	470µF 20% 25V
2543	4822 124 12284	470µF 20% 25V
2544	5322 126 11578	1nF 10% 50V 0603
2546	5322 126 10223	4.7nF 10% 63V
2547	5322 126 10223	4.7nF 10% 63V
2548	5322 126 10223	4.7nF 10% 63V
2549	5322 126 10223	4.7nF 10% 63V
2550	4822 126 13751	47nF 10% 63V
2551	4822 126 13751	47nF 10% 63V
2552	4822 126 13751	47nF 10% 63V
2553	4822 126 13751	47nF 10% 63V
2601	2238 586 59812	100nF 20-80% 50V 0603
2603	4822 126 13883	220pF 5% 50V
2604	4822 126 13473	220nF 80-20% 50V
2605	4822 126 13883	220pF 5% 50V
2620	4822 126 13473	220nF 80-20% 50V
2621	2238 586 59812	100nF 20-80% 50V 0603
2622	4822 124 40255	100µF 20% 63V
2623	4822 126 14238	2.2nF 50V 0603
2624	4822 121 51319	1µF 10% 63V
2625	4822 121 51319	1µF 10% 63V
2627	5322 124 40641	10µF 20% 100V
2628	4822 124 40255	100µF 20% 63V
2630	4822 126 14491	2.2µF -20+80% 10V 0805
2631	4822 126 14491	2.2µF -20+80% 10V 0805
2633	5322 126 11579	3.3nF 10% 63V
2635	2238 586 59812	100nF 20-80% 50V 0603
2642	4822 124 40255	100µF 20% 63V
2653	5322 126 11579	3.3nF 10% 63V
2656	2238 916 15641	22nF 10% 25V 0603
2657	2238 916 15641	22nF 10% 25V 0603
2659	2238 916 15641	22nF 10% 25V 0603
2660	5322 126 11578	1nF 10% 50V 0603
2661	5322 126 11582	6.8nF 10% 63V
2662	4822 126 13193	4.7nF 10% 63V
2702	3198 016 31020	1nF 10% 25V 0603
2704	3198 016 31020	1nF 10% 25V 0603
2705	4822 126 13482	470nF 80-20% 16V
2706	4822 126 14585	100nF 10% 50V
2707	4822 126 13879	220nF 20% 16V
2708	4822 126 14076	220nF 25V. 20%
2709	4822 126 13881	470pF 5% 50V
2710	4822 126 13881	470pF 5% 50V
2711	3198 016 31020	1nF 10% 25V 0603
2712	2020 552 96683	220nF 10% 50V
2713	4822 126 14076	220nF 25V. 20%
2714	4822 126 14549	33nF 16V 0603
2715	3198 016 31020	1nF 10% 25V 0603
2716	4822 126 14241	330pF 50V 0603
2717	5322 121 42498	680nF 5% 63V
2718	2238 861 18339	33pF 1% 50V
2719	3198 016 31020	1nF 10% 25V 0603
2720	4822 126 14076	220nF 25V. 20%
2721	4822 126 13881	470pF 5% 50V
2722	4822 126 13881	470pF 5% 50V
2723	3198 016 31020	1nF 10% 25V 0603
2724	2020 552 96683	220nF 10% 50V
2725	3198 016 31020	1nF 10% 25V 0603
2726	4822 126 14549	33nF 16V 0603
2727	3198 016 31020	1nF 10% 25V 0603
2728	4822 126 14241	330pF 50V 0603

2729	5322 121 42498	680nF 5% 63V
2730⚠	4822 126 14505	4.7nF 10% 2KV
2740	4822 121 51252	470nF 5% 63V
2741	2238 861 18339	33pF 1% 50V
2742	4822 126 14241	330pF 50V 0603
2743	4822 126 12105	33nF 5% 50V
2744	4822 126 12105	33nF 5% 50V
2745	4822 126 14241	330pF 50V 0603
2746	3198 016 31020	1nF 10% 25V 0603
2747	4822 126 13881	470pF 5% 50V
2748	2020 552 96683	220nF 10% 50V
2749	2020 552 96448	1µF 10% 16V
2750	2238 586 59812	100nF 20-80% 50V 0603
2751	4822 126 14585	100nF 10% 50V
2753	4822 126 14076	220nF 25V. 20%
2754	4822 126 14585	100nF 10% 50V
2755	3198 016 31020	1nF 10% 25V 0603
2756	4822 126 13881	470pF 5% 50V
2757	2020 552 96683	220nF 10% 50V
2758	5322 121 42498	680nF 5% 63V
2759	5322 126 10511	1nF 5% 50V
2760	5322 122 32268	470pF 5% 63V
2761	4822 126 13881	470pF 5% 50V
2762	4822 126 14076	220nF 25V. 20%
2763	4822 126 13879	220nF 20% 16V
2777	2020 552 96684	470nF 10% 25V
2778	4822 124 41751	47µF 20% 50V
2779	2020 552 96684	470nF 10% 25V
2780	2020 552 96684	470nF 10% 25V
2781	2020 552 96684	470nF 10% 25V
2782	2020 552 96684	470nF 10% 25V
2783	2020 552 96684	470nF 10% 25V
2784	2020 552 96684	470nF 10% 25V
2785	2020 552 96684	470nF 10% 25V
2786	2238 916 15641	22nF 10% 25V 0603
2787	2238 916 15641	22nF 10% 25V 0603
2788	2020 552 94427	100pF 5% 50v 0603
2789	2020 552 94427	100pF 5% 50v 0603
2790	2020 552 94427	100pF 5% 50v 0603
2794	2020 552 94427	100pF 5% 50v 0603
2795	2020 552 94427	100pF 5% 50v 0603
2796	2020 552 94427	100pF 5% 50v 0603
2797	2020 552 94427	100pF 5% 50v 0603
2798	2020 552 94427	100pF 5% 50v 0603
2941	4822 126 14585	100nF 10% 50V
2942	4822 126 14585	100nF 10% 50V
2943	4822 126 14585	100nF 10% 50V
2945	4822 126 14585	100nF 10% 50V
2946	4822 126 14585	100nF 10% 50V
2947	2020 021 90141	4.7µF 20% 50V
2948	4822 124 23432	100µF 20% 10V
2949	4822 124 23432	100µF 20% 10V

3101	4822 053 20225	2.2MΩ 5% 0.25W
3104	4822 116 52195	47Ω 5% 0.5W
3105	4822 050 11002	1kΩ 1% 0.4W
3106	4822 050 11002	1kΩ 1% 0.4W
3107	4822 050 11002	1kΩ 1% 0.4W
3108	4822 053 10478	4.7Ω 5% 1W
3111	4822 053 10152	1.5kΩ 5% 1W
3113	4822 116 52186	22Ω 5% 0.5W
3114	4822 116 83872	220Ω 5% 0.5W
3115	4822 116 52283	4.7kΩ 5% 0.5W
3117	4822 116 52195	47Ω 5% 0.5W
3118	4822 053 10478	4.7Ω 5% 1W
3121	4822 051 30109	10Ω 5% 0.062W
3122	4822 051 30471	470Ω 5% 0.062W
3123	4822 116 52176	10Ω 5% 0.5W
3124	4822 116 52199	68Ω 5% 0.5W
3125	4822 116 52182	15Ω 5% 0.5W
3126	4822 050 21003	10kΩ 1% 0.6W
3127	4822 116 52289	5.6kΩ 5% 0.5W
3130	4822 116 52297	68kΩ 5% 0.5W
3132	4822 051 20333	33kΩ 5% 0.1W
3134	4822 051 30102	1kΩ 5% 0.062W
3135	4822 117 13577	330Ω 1% 0805 1.25W
3137	4822 116 52234	100kΩ 5% 0,5W
3138	4822 051 20334	330kΩ 5% 0,1W
3140	4822 051 30223	22kΩ 5% 0.062W
3141	4822 051 30471	470Ω 5% 0.062W
3144	4822 116 83883	470Ω 5% 0.5W
3145	4822 051 20472	4.7kΩ 5% 0.1W
3146	4822 051 20479	47Ω 5% 0.1W
3147	4822 051 20223	22kΩ 5% 0.1W
3148	4822 051 20229	22Ω 5% 0.1W
3149	4822 051 30103	10kΩ 5% 0.062W
3150	4822 117 11503	220Ω 1% 0.1W
3151	4822 117 10834	47kΩ 1% 0.1W
3152	4822 051 30102	1kΩ 5% 0.062W
3153	4822 051 30223	22kΩ 5% 0.062W
3155	4822 051 30101	100Ω 5% 0.062W
3159	4822 051 30479	47Ω 5% 0.062W
3160	4822 051 30102	1kΩ 5% 0.062W
3161	4822 051 30123	12kΩ 5% 0.062W
3162	4822 053 20106	10MΩ 5% 0.25W
3169	4822 051 30102	1kΩ 5% 0.062W
3170	4822 117 12925	47kΩ 1% 0.063W 0603
3171	4822 051 30101	100Ω 5% 0.062W
3172	4822 051 20333	33kΩ 5% 0.1W
3173	4822 051 20333	33kΩ 5% 0.1W
3175	4822 051 30103	10kΩ 5% 0.062W
3176	4822 051 30103	10kΩ 5% 0.062W
3210	4822 051 30102	1kΩ 5% 0.062W
3211	4822 051 30222	2.2kΩ 5% 0.062W
3212	4822 051 30101	100Ω 5% 0.062W
3213	4822 116 52182	15Ω 5% 0.5W
3261	4822 117 11373	100Ω 1% 0805
3262	4822 117 11373	100Ω 1% 0805
3400	4822 052 11108	1Ω 5% 0.5W
3401	2120 105 93473	27Ω 5% 3W
3402	4822 053 10121	120Ω 5% 1W
3403	4822 116 52175	100Ω 5% 0.5W
3404	4822 051 30471	470Ω 5% 0.062W
3406	4822 117 11373	100Ω 1% 0805
3407	4822 051 30103	10kΩ 5% 0.062W
3409	4822 050 11002	1kΩ 1% 0.4W
3410	4822 051 20479	47Ω 5% 0.1W
3411	4822 116 52193	39Ω 5% 0.5W
3412	4822 117 11817	1.2kΩ 1% 1/16W
3414	4822 051 30331	330Ω 5% 0.062W
3415	3198 012 31590	15Ω 5% 3W
3417	4822 116 52176	10Ω 5% 0.5W
3418	4822 050 25603	56kΩ 1% 0.6W
3419	4822 051 30474	470kΩ 5% 0.062W
3420	4822 051 30332	3.3kΩ 5% 0.062W
3421	4822 051 30474	470kΩ 5% 0.062W
3422	4822 051 30332	3.3kΩ 5% 0.062W
3423	4822 053 10688	6.8Ω 5% 1W
3425	4822 116 52176	10Ω 5% 0.5W
3426	4822 116 52176	10Ω 5% 0.5W
3427	4822 051 30563	56kΩ 5% 0.062W
3427	4822 117 11148	56kΩ 1% 0.1W
3428	4822 051 20684	680kΩ 5% 0.1W
3428	4822 051 30684	680kΩ 5% 0.062W
3430	4822 051 20274	270kΩ 5% 0.1W
3430	4822 051 20334	330kΩ 5% 0,1W
3430	4822 117 12889	270kΩ 1% 0.063W 0603
3431	2306 207 03151	150Ω 5% 0.5W
3432	4822 051 20564	560kΩ 5% 0.1W
3433	4822 117 13632	100kΩ 1% 0603 0.62W
3434	4822 051 20008	Jumper 0805
3434	4822 051 20274	270kΩ 5% 0.1W
3437	4822 051 20109	10Ω 5% 0.1W
3437	4822 117 12889	270kΩ 1% 0.063W 0603
3440	4822 051 30102	1kΩ 5% 0.062W
3441	4822 051 30223	22kΩ 5% 0.062W
3442	4822 051 30474	470kΩ 5% 0.062W
3443	4822 051 30684	680kΩ 5% 0.062W
3444	4822 051 20108	1Ω 5% 0.1W
3447	4822 117 11373	100Ω 1% 0805
3449	4822 052 10101	100Ω 5% 0.33W
3450	4822 116 52257	22kΩ 5% 0.5W
3451	4822 116 52299	7.5kΩ 5% 0,5W
3455	4822 117 12902	8.2kΩ 1% 0.063W 0603
3456	4822 117 12903	1.8kΩ 1% 0.063W 0603
3457	4822 051 30152	1.5kΩ 5% 0.062W
3458	4822 051 30471	470Ω 5% 0.062W
3459	4822 051 30272	2.7kΩ 5% 0.062W
3460	4822 052 10108	1Ω 5% 0.33W
3461	4822 052 10108	1Ω 5% 0.33W
3462	4822 052 11108	1Ω 5% 0.5W
3463	4822 052 11108	1Ω 5% 0.5W
3464	4822 052 11108	1Ω 5% 0.5W
3465	4822 052 11108	1Ω 5% 0.5W
3466	4822 051 30472	4.7kΩ 5% 0.062W
3467	4822 117 13632	100kΩ 1% 0603 0.62W
3472	4822 051 30393	39kΩ 5% 0.062W
3474	4822 051 30563	56kΩ 5% 0.062W
3475	4822 051 30472	4.7kΩ 5% 0.062W
3476	4822 116 83874	220kΩ 5% 0.5W
3478	4822 116 52175	100Ω 5% 0.5W
3479	4822 052 10478	4.7Ω 5% 0.33W
3480	4822 052 10478	4.7Ω 5% 0.33W
3481	2322 750 61001	100Ω 5% 1206
3482	4822 051 30221	220Ω 5% 0.062W
3483	4822 117 12903	1.8kΩ 1% 0.063W 0603
3485	4822 051 30471	470Ω 5% 0.062W
3486	2120 108 94004	7.5kΩ 1% 0603
3487	4822 117 12902	8.2kΩ 1% 0.063W 0603
3488	4822 050 21005	1MΩ 1% 0.6W
3489	4822 051 30103	10kΩ 5% 0.062W
3490	4822 051 30332	3.3kΩ 5% 0.062W
3491	4822 117 12925	47kΩ 1% 0.063W 0603
3492	4822 116 52175	100Ω 5% 0.5W
3493	4822 050 21504	150kΩ 1% 0.6W
3495	4822 050 21503	15kΩ 1% 0.6W
3496	4822 051 30272	2.7kΩ 5% 0.062W
3497	4822 051 30333	33kΩ 5% 0.062W
3501	4822 116 83872	220Ω 5% 0.5W
3504	4822 051 30222	2.2kΩ 5% 0.062W
3505	4822 116 52245	150kΩ 5% 0.5W
3506	4822 051 30562	5.6kΩ 5% 0.063W 0603
3507	4822 050 21604	160kΩ 1% 0.6W
3508	4822 116 52182	15Ω 5% 0.5W
3509⚠	2122 550 00158	VDR 1mA 612V
3510	5322 117 12487	1kΩ 1% 0.125W
3511	4822 053 11222	2.2kΩ 5% 2W
3512	4822 051 30334	330kΩ 5% 0.062W
3513	4822 053 20155	1.5MΩ 5% 0.25W
3514	4822 117 11744	0.22Ω 5% 1W
3515	4822 117 11744	0.22Ω 5% 1W
3517	4822 117 10834	47kΩ 1% 0.1W
3518	4822 053 20334	330kΩ 5% 0.25W
3519	4822 117 11817	1.2kΩ 1% 1/16W
3520	4822 053 11333	33k 5% 2W
3521	4822 053 21475	4.7MΩ 5% 0,5W
3522	4822 117 11507	6.8kΩ 1% 0.1W
3523	4822 051 20105	1MΩ 5% 0.1W
3524	4822 051 30333	33kΩ 5% 0.062W
3525	4822 051 30479	47Ω 5% 0.062W
3527	4822 117 11951	2kΩ 1% 0.1W
3528	4822 051 30103	10kΩ 5% 0.062W
3529	4822 051 30472	4.7kΩ 5% 0.062W
3530	4822 051 30102	1kΩ 5% 0.062W
3531	4822 051 20472	4.7kΩ 5% 0.1W
3532	4822 117 12925	47kΩ 1% 0.063W 0603
3533	4822 116 52182	15Ω 5% 0.5W
3534	4822 117 12925	47kΩ 1% 0.063W 0603
3535	4822 051 30479	47Ω 5% 0.062W
3536	4822 051 30152	1.5kΩ 5% 0.062W
3537	4822 052 10471	470Ω 5% 0,33W
3538	4822 051 20333	33kΩ 5% 0.1W
3539	4822 051 20393	39kΩ 5% 0.1W
3540	4822 050 21003	10kΩ 1% 0.6W
3541	4822 116 52186	22Ω 5% 0.5W
3543	4822 050 11002	1kΩ 1% 0.4W
3544	4822 051 20393	39kΩ 5% 0.1W
3545	4822 116 52244	15kΩ 5% 0.5W
3546	4822 050 21003	10kΩ 1% 0.6W
3547	4822 051 30221	220Ω 5% 0.062W
3549	4822 051 30393	39kΩ 5% 0.062W
3550⚠	2122 663 00018	PTC 4.7Ω 20%
3552	4822 117 12903	1.8kΩ 1% 0.063W 0603
3553	4822 051 30153	15kΩ 5% 0.062W
3554	4822 053 20106	10MΩ 5% 0.25W
3555	4822 116 52285	470kΩ 5% 0.5W
3556	4822 117 10834	47kΩ 1% 0.1W
3557	3198 021 52240	220kΩ 5% 0805
3558	4822 117 10834	47kΩ 1% 0.1W
3559	4822 050 21003	10kΩ 1% 0.6W
3560	4822 051 20105	1MΩ 5% 0.1W
3610	4822 051 30223	22kΩ 5% 0.062W
3611	4822 051 30222	2.2kΩ 5% 0.062W
3620	4822 116 80676	1Ω5 5% 0.5W
3621	4822 116 80676	1Ω5 5% 0.5W
3622	4822 116 80676	1Ω5 5% 0.5W
3623	4822 116 52251	18kΩ 5% 0.5W
3624	4822 052 10158	1Ω5 5% 0.33W
3625	4822 050 15609	56Ω 1% 0.4W
3625	4822 053 10121	120Ω 5% 1W
3626	4822 050 15609	56Ω 1% 0.4W
3626	4822 116 52199	68Ω 5% 0.5W
3626	4822 116 80176	1Ω 5% 0.5W
3627	4822 051 20223	22kΩ 5% 0.1W
3630	4822 051 30393	39kΩ 5% 0.062W
3631	4822 051 30222	2.2kΩ 5% 0.062W
3632	4822 051 30183	18kΩ 5% 0.062W
3633	4822 051 30563	56kΩ 5% 0.062W
3634	4822 116 52251	18kΩ 5% 0.5W
3635	4822 116 52219	330Ω 5% 0.5W
3636	4822 051 30223	22kΩ 5% 0.062W
3637	4822 051 30103	10kΩ 5% 0.062W
3638	4822 051 30474	470kΩ 5% 0.062W
3639	4822 051 30563	56kΩ 5% 0.062W
3640	4822 051 30222	2.2kΩ 5% 0.062W
3641	4822 116 83883	470Ω 5% 0.5W
3642	4822 101 11193	47k 30% 0.1W
3643	4822 051 30334	330kΩ 5% 0.062W
3644	4822 051 30221	220Ω 5% 0.062W
3645	4822 116 52245	150kΩ 5% 0.5W
3646	4822 117 12925	47kΩ 1% 0.063W 0603
3647	4822 051 20228	2.2Ω 5% 0.1W
3649	4822 051 30103	10kΩ 5% 0.062W
3652	4822 051 20479	47Ω 5% 0.1W
3653	4822 051 20223	22kΩ 5% 0.1W
3654	4822 051 20472	4.7kΩ 5% 0.1W
3655	4822 051 30103	10kΩ 5% 0.062W
3656	4822 117 11817	1.2kΩ 1% 1/16W
3657	4822 051 30223	22kΩ 5% 0.062W

3658	4822 051 30223	22kΩ 5% 0.062W
3659	4822 051 30222	2.2kΩ 5% 0.062W
3660	4822 051 30562	5.6kΩ 5% 0.063W 0603
3661	4822 116 52206	120Ω 5% 0.5W
3662	4822 051 30152	1.5kΩ 5% 0.062W
3663	4822 116 52213	180Ω 5% 0.5W
3664	4822 051 30333	33kΩ 5% 0.062W
3681	4822 116 52207	1.2kΩ 5% 0.5W
3682	4822 117 13632	100kΩ 1% 0603 0.62W
3683	4822 051 30103	10kΩ 5% 0.062W
3684	4822 051 30682	6.8kΩ 5% 0.062W
3685	4822 051 30273	27kΩ 5% 0.062W
3686	4822 051 30563	56kΩ 5% 0.062W
3687	4822 116 52207	1.2kΩ 5% 0.5W
3688	4822 051 20684	680kΩ 5% 0.1W
3690	4822 051 30183	18kΩ 5% 0.062W
3691	4822 117 11373	100Ω 1% 0805
3701	4822 051 30103	10kΩ 5% 0.062W
3702	4822 051 30103	10kΩ 5% 0.062W
3703	4822 051 30333	33kΩ 5% 0.062W
3704	4822 117 10833	10kΩ 1% 0.1W
3705	4822 051 20828	8.2Ω 5% 0.1W
3706	4822 051 30472	4.7kΩ 5% 0.062W
3707	4822 051 30683	68kΩ 5% 0.062W
3708	4822 051 30563	56kΩ 5% 0.062W
3709	4822 117 11503	220Ω 1% 0.1W
3710	4822 051 30223	22kΩ 5% 0.062W
3711	4822 050 11204	120kΩ 1% 0.4W
3712	4822 117 12706	10kΩ 1% 0.063W 0603
3713	4822 116 83884	47kΩ 5% 0.5W
3714	4822 117 12925	47kΩ 1% 0.063W 0603
3715	4822 117 12925	47kΩ 1% 0.063W 0603
3716	4822 117 12925	47kΩ 1% 0.063W 0603
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3719	4822 117 11503	220Ω 1% 0.1W
3720	4822 117 11503	220Ω 1% 0.1W
3721	4822 051 30472	4.7kΩ 5% 0.062W
3722	4822 051 30683	68kΩ 5% 0.062W
3723	4822 051 30563	56kΩ 5% 0.062W
3724	4822 117 11503	220Ω 1% 0.1W
3725	4822 051 30223	22kΩ 5% 0.062W
3726	4822 117 11503	220Ω 1% 0.1W
3727	4822 117 11503	220Ω 1% 0.1W
3728	4822 116 52234	100kΩ 5% 0,5W
3729	4822 117 10837	100kΩ 1% 0.1W
3730	4822 117 11503	220Ω 1% 0.1W
3731	4822 117 11503	220Ω 1% 0.1W
3732	4822 051 30223	22kΩ 5% 0.062W
3733	4822 051 30223	22kΩ 5% 0.062W
3734	4822 051 20124	120kΩ 5% 0.1W
3735	4822 051 30683	68kΩ 5% 0.062W
3736	4822 051 30563	56kΩ 5% 0.062W
3737	4822 051 30472	4.7kΩ 5% 0.062W
3738	4822 051 20828	8.2Ω 5% 0.1W
3739	4822 051 30683	68kΩ 5% 0.062W
3740	4822 051 30472	4.7kΩ 5% 0.062W
3741	2322 704 61243	12k4 1% 0603
3742	4822 051 30563	56kΩ 5% 0.062W
3743	4822 117 11449	2.2kΩ 5% 0.1W 0805
3745	4822 051 30102	1kΩ 5% 0.062W
3746	4822 051 30223	22kΩ 5% 0.062W
3748	4822 051 30008	Jumper 0603
3749	4822 116 83883	470Ω 5% 0.5W
3750	4822 117 11449	2.2kΩ 5% 0.1W 0805
3751	4822 117 11449	2.2kΩ 5% 0.1W 0805
3752	4822 117 11449	2.2kΩ 5% 0.1W 0805
3790	4822 051 30392	3.9kΩ 5% 0.063W 0603
3791	4822 051 30392	3.9kΩ 5% 0.063W 0603
3792	4822 051 30153	15kΩ 5% 0.062W
3793	4822 051 30153	15kΩ 5% 0.062W
3794	4822 051 30153	15kΩ 5% 0.062W
3795	4822 051 30123	12kΩ 5% 0.062W
3796	4822 051 30392	3.9kΩ 5% 0.063W 0603
3797	4822 051 30562	5.6kΩ 5% 0.063W 0603
3798	4822 051 30153	15kΩ 5% 0.062W
3998	4822 050 11002	1kΩ 1% 0.4W
9111	4822 051 20008	Jumper 0805
9115	4822 051 20008	Jumper 0805
9129	4822 051 20008	Jumper 0805
9418	4822 051 20008	Jumper 0805
9421	4822 051 20008	Jumper 0805
9422	4822 051 30008	Jumper 0603
9424	4822 051 30008	Jumper 0603
9427	4822 051 30008	Jumper 0603
9428	4822 051 30008	Jumper 0603
9429	4822 051 30008	Jumper 0603
9430	4822 051 30008	Jumper 0603
9431	4822 051 30008	Jumper 0603
9432	4822 051 30008	Jumper 0603
9433	4822 051 30008	Jumper 0603
9434	4822 051 30008	Jumper 0603
9435	4822 051 30008	Jumper 0603
9436	4822 051 30008	Jumper 0603
9437	4822 051 30008	Jumper 0603
9438	4822 051 30008	Jumper 0603
9440	4822 051 30008	Jumper 0603
9441	4822 051 30008	Jumper 0603
9443	4822 051 30008	Jumper 0603
9481	4822 051 30008	Jumper 0603
9483	4822 051 30008	Jumper 0603
9499	4822 051 30008	Jumper 0603
9561	4822 051 20008	Jumper 0805
9621	4822 051 30008	Jumper 0603
9624	4822 051 30008	Jumper 0603
9676	4822 051 30008	Jumper 0603
9677	4822 051 20008	Jumper 0805
9702	4822 051 30008	Jumper 0603
9705	4822 051 20008	Jumper 0805
9706	4822 051 30471	470Ω 5% 0.062W
9707	4822 051 30008	Jumper 0603
9711	4822 051 30008	Jumper 0603
9713	4822 051 30008	Jumper 0603
9714	4822 051 20008	Jumper 0805
9716	4822 051 20008	Jumper 0805
9717	4822 051 30008	Jumper 0603
9903	4822 051 30008	Jumper 0603
9908	4822 051 20008	Jumper 0805
9918	4822 051 30008	Jumper 0603
9920	4822 051 30008	Jumper 0603
9921	4822 051 20008	Jumper 0805
9922	4822 051 20008	Jumper 0805
9924	4822 051 20008	Jumper 0805
9925	4822 051 20008	Jumper 0805
9927	4822 051 30008	Jumper 0603
9933	4822 051 20008	Jumper 0805
9949	4822 051 30008	Jumper 0603
9950	4822 051 30008	Jumper 0603
9959	4822 051 20008	Jumper 0805
9966	4822 051 20008	Jumper 0805
9981	4822 051 20008	Jumper 0805
9984	4822 051 20008	Jumper 0805
9986	4822 051 20008	Jumper 0805
9994	4822 051 30008	Jumper 0603

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5101▲	3104 308 20851	Trans. BS28219-01
5101▲	8204 000 75921	Trans. BS28219-01
5102	4822 526 10704	Bead 45Ω at 50MHz
5103	4822 526 10704	Bead 45Ω at 50MHz
5104	4822 157 11411	Bead 83Ω at 100MHz
5105	4822 157 11716	Bead 30Ω at 100MHz
5106	4822 526 10704	Bead 45Ω at 50MHz
5107	4822 157 11411	Bead 83Ω at 100MHz
5108	4822 526 10704	Bead 45Ω at 50MHz
5110	4822 157 71736	10µH 10%
5112	4822 157 11411	Bead 83Ω at 100MHz
5131	4822 157 50964	100µH 20%
5132	4822 157 11716	Bead 30Ω at 100MHz
5400	4822 157 11869	33µH 10% LHL08
5401	2422 536 00059	12µH 10%
5402	3198 018 21510	150µH 10%
5410▲	3128 138 39091	Transformer CE165T
5411	4822 157 71097	0.56µH 10%
5421	3104 308 20691	Linearity coil 5µH 36"
5422	4822 146 11137	Bridge coil W7131-003
5423	4822 157 71097	0.56µH 10%
5425	4822 157 11411	Bead 83Ω at 100MHz
5426	4822 157 70826	2.4µH
5430▲	3104 308 20501	LOT 1392.9010A
5461	4822 157 11411	Bead 83Ω at 100MHz
5463	4822 157 11411	Bead 83Ω at 100MHz
5465	4822 157 11411	Bead 83Ω at 100MHz
5467	4822 157 11411	Bead 83Ω at 100MHz
5469	4822 157 11411	Bead 83Ω at 100MHz
5501▲	4822 157 11523	DMF-2405
5504▲	2422 549 44877	Filter 45mH DMF2845H
5504▲	3104 308 20861	Filt. 35mH DMF2835 B
5505	4822 157 11411	Bead 83Ω at 100MHz
5507	4822 157 11411	Bead 83Ω at 100MHz
5509	4822 157 11411	Bead 83Ω at 100MHz
5511	2422 549 44873	Filter mains 56mH
5512▲	3104 308 20841	Transf. BS41218-00
5512▲	8204 000 75911	Transf. BS41218-00
5513	4822 157 11869	33µH 10% LHL08
5514	4822 157 11869	33µH 10% LHL08
5515	4822 157 11869	33µH 10% LHL08
5517	4822 157 11411	Bead 83Ω at 100MHz
5518	4822 526 10704	Bead 45Ω at 50MHz
5519	4822 157 11716	Bead 30Ω at 100MHz
5520	4822 157 11411	Bead 83Ω at 100MHz
5620	4822 157 11771	0.09µH 10%
5621▲	3104 308 20571	Trans. S13974-03
5701	2422 536 00385	68µH 10%
5702	2422 536 00385	68µH 10%
5703	4822 157 11716	Bead 30Ω at 100MHz
5707	4822 157 11411	Bead 83Ω at 100MHz
5708	4822 157 11411	Bead 83Ω at 100MHz
5711	4822 157 11411	Bead 83Ω at 100MHz
5712	4822 157 11411	Bead 83Ω at 100MHz
5715	4822 157 11411	Bead 83Ω at 100MHz
5716	4822 157 11411	Bead 83Ω at 100MHz
5720	2422 536 00385	68µH 10%
5721	2422 536 00385	68µH 10%
5722	4822 157 11411	Bead 83Ω at 100MHz
5723	4822 157 11411	Bead 83Ω at 100MHz
5725	4822 157 11411	Bead 83Ω at 100MHz
5902	4822 157 11869	33µH 10% LHL08
5903	4822 157 10359	33µH 10%

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6080	4822 130 11397	BAS316
6082	4822 130 11528	1PS76SB10
6084	4822 130 11522	UDZ15B
6103	4822 130 41601	BYV95A
6103	4822 130 42488	BYD33D
6104	9340 548 69115	PDZ27B
6105	4822 130 34281	BZX79-B15
6106	3198 010 52790	BZX79-B27
6107	4822 130 11572	STPS8H100F
6108	4822 130 11528	1PS76SB10
6109	4822 130 31083	BYW55
6110	4822 130 42606	BYD33J
6110	9340 418 70133	BYV27-600
6111	4822 130 11596	BYW29EX-200
6113	4822 130 11596	BYW29EX-200
6114	4822 130 41601	BYV95A
6114	4822 130 42488	BYD33D
6115	4822 130 11528	1PS76SB10
6116	3198 020 55680	BZX384-C5V6
6117	9340 548 71115	SM PDZ33B
6118	9340 548 71115	SM PDZ33B
6119	9340 548 71115	SM PDZ33B
6120	4822 130 30621	1N4148
6121	4822 130 30621	1N4148
6122	3198 010 53980	BZX79-B3V9
6130	9340 548 61115	PDZ12B
6131	4822 130 11397	BAS316
6132	4822 130 11416	PDZ6.8B
6133	4822 130 11397	BAS316
6134	4822 130 11397	BAS316
6141	4822 130 11522	UDZ15B
6142	4822 130 11528	1PS76SB10
6143	4822 130 11397	BAS316
6144	4822 130 11397	BAS316
6147	4822 130 33657	BZV85-C6V8
6148	4822 130 11397	BAS316
6149	3198 020 55680	BZX384-C5V6
6400	4822 130 70055	BYV27-400
6402	4822 130 11397	BAS316
6403	9340 548 52115	PDZ5.1B
6404	4822 130 11397	BAS316
6405	4822 130 34383	BZX79-B47
6406	4822 130 11397	BAS316
6407	4822 130 11397	BAS316
6408	4822 130 42488	BYD33D
6421	4822 130 10753	BY359X-1500
6422	4822 130 10218	BY229X-800
6442	4822 130 11522	UDZ15B
6455	4822 130 11397	BAS316
6456	5322 130 34337	BAV99
6457	9322 102 64685	UDZ2.7B
6458	3198 020 55680	BZX384-C5V6
6460	4822 130 41487	BYV95C
6462	9322 127 32682	BYW76-RAS15/10
6464	9322 127 32682	BYW76-RAS15/10
6480	4822 130 42488	BYD33D
6481	4822 130 11522	UDZ15B
6482	4822 130 11397	BAS316
6483	4822 130 11528	1PS76SB10
6493	4822 130 11528	1PS76SB10
6499	4822 130 11551	UDZS10B
6505	4822 130 34281	BZX79-B15
6506	4822 130 80622	BAT54
6507	4822 130 11397	BAS316
6509	4822 130 11397	BAS316
6510	4822 130 34142	BZX79-B33
6511	4822 130 11397	BAS316
6512	4822 130 11397	BAS316
6514	5322 130 31932	BZT03-C200
6515	4822 130 33657	BZV85-C6V8
6516	4822 130 11397	BAS316
6517	4822 130 11528	1PS76SB10
6518	9340 548 69115	PDZ27B
6519	4822 130 42488	BYD33D
6519	5322 130 31938	BYV27-200
6520	4822 130 30621	1N4148
6522	4822 130 11397	BAS316

6523	4822 130 80622	BAT54
6525⚠	4822 130 10741	GBU6J
6530	4822 130 41487	BYV95C
6533	4822 130 80622	BAT54
6534	9322 165 72687	DTV1500MFP
6535	4822 130 11572	STPS8H100F
6536	4822 130 11572	STPS8H100F
6537	4822 130 11397	BAS316
6614	4822 130 11528	1PS76SB10
6615	4822 130 11397	BAS316
6616	4822 130 11397	BAS316
6617	4822 130 11397	BAS316
6618	4822 130 11397	BAS316
6619	4822 130 42488	BYD33D
6620	5322 130 31938	BYV27-200
6621	4822 130 42488	BYD33D
6622	5322 130 33635	BZV85-C8V2
6623	4822 130 11397	BAS316
6624	4822 130 11397	BAS316
6625	4822 130 11397	BAS316
6626	4822 130 11397	BAS316
6627	4822 130 11397	BAS316
6701	4822 130 11397	BAS316
6745	4822 130 11551	UDZS10B

7100	4822 130 44568	BC557B
7101	4822 130 40981	BC337-25
7102	4822 130 11417	STP3NB60FP
7103⚠	9322 149 04682	TCET1102
7105	4822 130 44568	BC557B
7120	5322 130 60159	BC846B
7130	5322 130 60159	BC846B
7131	4822 130 11336	STP16NE06FP
7140	5322 130 60159	BC846B
7141	4822 130 11336	STP16NE06FP
7210	5322 130 60159	BC846B
7211	4822 130 42804	BC817-25
7408	5322 130 44647	BC368
7409	5322 130 60159	BC846B
7421	9340 210 30127	BU2520DX
7440	4822 209 70672	LM358N SEL.
7441	4822 130 60373	BC856B
7442	4822 130 60373	BC856B
7443	5322 130 60159	BC846B
7445	5322 130 60159	BC846B
7450	5322 209 61472	LM393M
7455	4822 209 73852	PMBT2369
7480	4822 130 11417	STP3NB60FP
7482⚠	4822 130 11418	TCDT1102G
7486	5322 130 60159	BC846B
7487	5322 130 60159	BC846B
7501	5322 130 60159	BC846B
7502	4822 130 40981	BC337-25
7504	9322 171 30687	STP11NM60
7505	4822 130 60373	BC856B
7506	4822 209 14933	TL431IZ
7507	9322 149 04682	TCET1102
7508	4822 130 41646	BF423
7528	4822 130 40981	BC337-25
7529	4822 130 44461	BC546B
7530	5322 130 60159	BC846B
7611	5322 130 60159	BC846B
7612	5322 130 60159	BC846B
7613	4822 209 81397	TL431CLPST
7614	5322 130 60159	BC846B
7620	4822 209 90009	TDA8177
7641	5322 130 60159	BC846B
7652	5322 130 60159	BC846B
7653	5322 130 60159	BC846B
7654	4822 130 60373	BC856B
7680	4822 209 60956	TDA7052/N2
7681	5322 130 60159	BC846B
7682	5322 130 44647	BC368
7700	9322 163 86682	TDA7490L
7701	5322 130 60159	BC846B
7702	9322 163 86682	TDA7490L
7703	5322 130 60159	BC846B
7704	5322 130 60159	BC846B
7705	5322 130 60159	BC846B
7706	4822 130 60373	BC856B
7707	5322 130 60159	BC846B

Small Signal Panel [B]

Various

0031	3104 304 24941	SSB-Top frame
1001	2422 543 89022	Crystal 6MHz 20pF CX5F
1301	2422 540 98456	Resonator 12MHz
1305	2422 543 01184	Xtal 4.433619MHz 20pF
1308	2422 543 01183	Xtal 3.579545MHz 16pF
1402	2422 025 17103	Connector 3p m
1407	2422 549 44324	Filt. TPWCC04BS
1408	2422 549 44372	SAW 38.9MHz K3953L
1409	2422 549 44369	SAW 38.9MHz K9656L
1702	2422 540 98456	Resonator 12MHz
1A00	2422 543 89019	Crystal 18.432MHz 12pF
1I01	4822 267 10771	Socket 2 x SCART
1I03	2422 025 16194	Socket 8P for transmitter
1I04	4822 267 10771	Socket 2 x SCART
1I05	4822 267 11033	Socket CINCH 3P f
1I06	2422 026 05424	Socket CINCH 6P f
1I11	2422 025 17388	Connector 30p f
1I70	2422 025 16966	Connector 5P m SMD
1P00	2422 543 01184	Xtal 4.433619MHz 20pF
1P03	2422 543 01183	Xtal 3.579545MHz 16pF
1P04	2422 549 44369	SAW 38.9MHz K9656L
1P06	2422 549 44372	SAW 38.9MHz K3953L
1P09	2422 549 44324	Filt. TPWCC04BS
1P10	4822 242 81299	Filter 6.5 MHz
1P11	4822 242 10314	Filter 5.5 MHz
1P12	4822 242 81265	Filter 6.0 MHz
1S02	2422 025 17682	Connector 40p M
1S15	2422 025 17682	Connector 40p M
1T01⚠	3139 147 19571	Tuner UV1318ST/A I-3
1T02	3139 147 19341	Tuner UV1318S/A I-3
1U01⚠	2422 086 11021	Fuse SM T 800 mA 63V
1U02	2422 025 17104	Connector 7p m
8205	3104 311 05121	Cable 40P/180/40P
8206	3104 311 05301	Cable 40P/220/40P
8250	3104 311 05981	FFC Foil 30P/120/30P
8251	3104 311 03161	Cable 7P/340/7P KR

⊣⊢

2002	4822 126 11669	27pF 5% 50V 0603
2003	4822 126 13879	220nF 20% 16V
2004	4822 126 13879	220nF 20% 16V
2005	2238 586 59812	100nF 20-80% 50V 0603
2006	2238 586 59812	100nF 20-80% 50V 0603
2007	2238 586 59812	100nF 20-80% 50V 0603
2008	2238 586 59812	100nF 20-80% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	2020 021 91557	100µF 20% 16V
2016	4822 124 12095	100µF 20% 16V
2017	2238 586 59812	100nF 20-80% 50V 0603
2018	2222 867 15339	33pF 5% 50V 0603
2019	2238 586 59812	100nF 20-80% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20-80% 50V 0603
2023	2238 586 59812	100nF 20-80% 50V 0603
2024	2238 586 59812	100nF 20-80% 50V 0603
2025	2238 586 59812	100nF 20-80% 50V 0603
2026	2238 586 59812	100nF 20-80% 50V 0603
2027	2238 586 59812	100nF 20-80% 50V 0603
2028	2238 586 59812	100nF 20-80% 50V 0603
2029	2238 586 59812	100nF 20-80% 50V 0603
2031	2238 586 59812	100nF 20-80% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20-80% 50V 0603
2039	2238 586 59812	100nF 20-80% 50V 0603
2040	2238 586 59812	100nF 20-80% 50V 0603
2067	2238 586 59812	100nF 20-80% 50V 0603
2068	4822 126 14238	2.2nF 50V 0603
2071	2238 586 59812	100nF 20-80% 50V 0603
2072	2238 586 59812	100nF 20-80% 50V 0603
2073	2238 586 59812	100nF 20-80% 50V 0603
2074	2238 586 59812	100nF 20-80% 50V 0603
2302	2238 586 59812	100nF 20-80% 50V 0603
2303	4822 122 33177	10nF 20% 50V
2304	4822 122 33741	10pF 10% 50V
2305	2238 586 59812	100nF 20-80% 50V 0603
2306	4822 126 13881	470pF 5% 50V
2307	2238 586 59812	100nF 20-80% 50V 0603
2308	4822 122 33741	10pF 10% 50V
2312	2020 552 96659	33nF 5% 50V 1206
2313	2020 552 96685	100nF 5% 25V 1206
2314	2020 021 91557	100µF 20% 16V
2315	2238 586 59812	100nF 20-80% 50V 0603
2316	2238 586 59812	100nF 20-80% 50V 0603
2317	2020 552 96448	1µF 10% 16V
2318	2238 916 15641	22nF 10% 25V 0603
2319	5322 126 11578	1nF 10% 50V 0603
2320	4822 122 33741	10pF 10% 50V
2321	2238 586 59812	100nF 20-80% 50V 0603
2322	2238 586 59812	100nF 20-80% 50V 0603
2323	2238 586 59812	100nF 20-80% 50V 0603
2324	5322 126 11583	10nF 10% 50V 0603
2325	2238 586 59812	100nF 20-80% 50V 0603
2326	5322 126 11583	10nF 10% 50V 0603
2328	4822 122 33761	22pF 5% 50V
2329	2238 586 59812	100nF 20-80% 50V 0603
2330	2238 586 59812	100nF 20-80% 50V 0603
2331	2238 586 59812	100nF 20-80% 50V 0603
2332	2238 586 59812	100nF 20-80% 50V 0603
2333	4822 126 14491	2.2µF -20+80% 10V 0805
2334	2022 552 05615	2.2µF 10% 6.3V 0805
2335	5322 126 11578	1nF 10% 50V 0603
2336	2022 552 05615	2.2µF 10% 6.3V 0805
2340	2020 021 91557	100µF 20% 16V
2350	2238 586 59812	100nF 20-80% 50V 0603
2351	2238 586 59812	100nF 20-80% 50V 0603
2352	2238 586 59812	100nF 20-80% 50V 0603
2353	2238 586 59812	100nF 20-80% 50V 0603
2354	2238 586 59812	100nF 20-80% 50V 0603
2356	2238 586 59812	100nF 20-80% 50V 0603
2357	2238 586 59812	100nF 20-80% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2359	4822 122 33752	15pF 5% 50V
2360	3198 016 31280	1.2pF 50V 0603
2361	3198 016 31280	1.2pF 50V 0603
2362	4822 126 11663	12pF 5% 50V 0603
2363	4822 126 13881	470pF 5% 50V
2365	2238 586 59812	100nF 20-80% 50V 0603
2366	2238 586 59812	100nF 20-80% 50V 0603
2367	2238 586 59812	100nF 20-80% 50V 0603
2368	2238 586 59812	100nF 20-80% 50V 0603
2369	2238 586 59812	100nF 20-80% 50V 0603
2370	2238 586 59812	100nF 20-80% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	2020 552 96448	1µF 10% 16V
2373	2238 586 59812	100nF 20-80% 50V 0603
2374	4822 126 14491	2.2µF -20+80% 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20-80% 50V 0603
2377	2020 021 91557	100µF 20% 16V
2378	2238 586 59812	100nF 20-80% 50V 0603
2384	2238 586 59812	100nF 20-80% 50V 0603
2385	2238 586 59812	100nF 20-80% 50V 0603
2386	5322 126 11578	1nF 10% 50V 0603
2390	2238 586 59812	100nF 20-80% 50V 0603
2391	2238 586 59812	100nF 20-80% 50V 0603
2394	4822 126 14491	2.2µF -20+80% 10V 0805
2403	2238 586 59812	100nF 20-80% 50V 0603
2404	2020 552 96448	1µF 10% 16V
2405	4822 126 13193	4.7nF 10% 63V
2406	4822 126 13883	220pF 5% 50V
2407	4822 126 13956	68pF 5% 63V 0603
2408	3198 016 33380	3.3pF 50V 0603
2409	4822 126 14491	2.2µF -20+80% 10V 0805
2410	2020 021 91557	100µF 20% 16V
2411	2238 586 59812	100nF 20-80% 50V 0603
2412	4822 126 13193	4.7nF 10% 63V
2414	2020 021 91557	100µF 20% 16V
2415	2238 586 59812	100nF 20-80% 50V 0603
2417	3198 017 44740	470nF 10V 0603
2418	3198 016 35680	5.6pF 0.5pF 50V 0603
2422	2238 586 59812	100nF 20-80% 50V 0603
2424	2238 586 59812	100nF 20-80% 50V 0603
2425	2020 021 91557	100µF 20% 16V
2431	2238 586 59812	100nF 20-80% 50V 0603
2432	2238 586 59812	100nF 20-80% 50V 0603
2433	2238 586 59812	100nF 20-80% 50V 0603
2701	4822 122 33752	15pF 5% 50V
2704	4822 122 33752	15pF 5% 50V
2707	4822 122 33752	15pF 5% 50V
2709	2238 586 59812	100nF 20-80% 50V 0603
2710	2238 586 59812	100nF 20-80% 50V 0603
2711	2238 586 59812	100nF 20-80% 50V 0603
2712	2238 586 59812	100nF 20-80% 50V 0603
2713	4822 122 33761	22pF 5% 50V
2714	4822 122 33761	22pF 5% 50V
2716	2238 586 59812	100nF 20-80% 50V 0603
2717	4822 126 11663	12pF 5% 50V 0603
2718	4822 122 33752	15pF 5% 50V
2719	4822 122 33752	15pF 5% 50V
2720	4822 122 33752	15pF 5% 50V
2721	2020 552 94427	100pF 5% 50v 0603
2722	2020 552 94427	100pF 5% 50v 0603
2723	4822 126 14225	56pF 5% 50V 0603
2724	2020 552 94427	100pF 5% 50v 0603
2725	4822 126 11663	12pF 5% 50V 0603
2726	4822 126 11669	27pF 5% 50V 0603
2727	4822 126 11663	12pF 5% 50V 0603
2728	2020 021 91554	10µF 20% 16V
2729	2238 586 59812	100nF 20-80% 50V 0603
2730	2020 021 91557	100µF 20% 16V
2731	2238 586 59812	100nF 20-80% 50V 0603
2732	2238 586 59812	100nF 20-80% 50V 0603
2733	2238 586 59812	100nF 20-80% 50V 0603

2734	2238 586 59812	100nF 20-80% 50V 0603
2735	2238 586 59812	100nF 20-80% 50V 0603
2736	4822 126 11669	27pF 5% 50V 0603
2737	4822 126 11663	12pF 5% 50V 0603
2738	4822 126 11663	12pF 5% 50V 0603
2739	4822 126 11669	27pF 5% 50V 0603
2740	2238 916 15641	22nF 10% 25V 0603
2741	2238 916 15641	22nF 10% 25V 0603
2742	2238 916 15641	22nF 10% 25V 0603
2743	2238 586 59812	100nF 20-80% 50V 0603
2744	2238 586 59812	100nF 20-80% 50V 0603
2745	2238 586 59812	100nF 20-80% 50V 0603
2746	2238 586 59812	100nF 20-80% 50V 0603
2747	2238 586 59812	100nF 20-80% 50V 0603
2748	2238 586 59812	100nF 20-80% 50V 0603
2749	2020 021 91554	10µF 20% 16V
2750	2238 586 59812	100nF 20-80% 50V 0603
2751	2238 586 59812	100nF 20-80% 50V 0603
2752	2238 586 59812	100nF 20-80% 50V 0603
2753	2238 586 59812	100nF 20-80% 50V 0603
2754	2238 586 59812	100nF 20-80% 50V 0603
2755	2238 586 59812	100nF 20-80% 50V 0603
2756	2238 586 59812	100nF 20-80% 50V 0603
2757	2238 916 15641	22nF 10% 25V 0603
2760	2238 586 59812	100nF 20-80% 50V 0603
2761	2238 586 59812	100nF 20-80% 50V 0603
2762	2238 586 59812	100nF 20-80% 50V 0603
2763	2238 586 59812	100nF 20-80% 50V 0603
2764	2238 586 59812	100nF 20-80% 50V 0603
2765	2238 586 59812	100nF 20-80% 50V 0603
2766	2238 586 59812	100nF 20-80% 50V 0603
2767	2238 586 59812	100nF 20-80% 50V 0603
2768	2238 586 59812	100nF 20-80% 50V 0603
2769	2238 586 59812	100nF 20-80% 50V 0603
2770	2020 021 91554	10µF 20% 16V
2771	2238 586 59812	100nF 20-80% 50V 0603
2772	2020 021 91557	100µF 20% 16V
2773	2238 586 59812	100nF 20-80% 50V 0603
2774	2238 586 59812	100nF 20-80% 50V 0603
2775	2238 586 59812	100nF 20-80% 50V 0603
2776	2238 586 59812	100nF 20-80% 50V 0603
2777	2238 586 59812	100nF 20-80% 50V 0603
2778	2238 586 59812	100nF 20-80% 50V 0603
2779	2238 586 59812	100nF 20-80% 50V 0603
2780	2238 586 59812	100nF 20-80% 50V 0603
2781	2238 586 59812	100nF 20-80% 50V 0603
2782	2238 586 59812	100nF 20-80% 50V 0603
2783	2238 586 59812	100nF 20-80% 50V 0603
2784	2238 586 59812	100nF 20-80% 50V 0603
2785	2238 586 59812	100nF 20-80% 50V 0603
2786	2238 586 59812	100nF 20-80% 50V 0603
2787	2238 586 59812	100nF 20-80% 50V 0603
2788	2238 586 59812	100nF 20-80% 50V 0603
2789	2238 586 59812	100nF 20-80% 50V 0603
2790	2238 586 59812	100nF 20-80% 50V 0603
2791	2238 586 59812	100nF 20-80% 50V 0603
2792	2020 021 91554	10µF 20% 16V
2793	2238 586 59812	100nF 20-80% 50V 0603
2794	2020 021 91554	10µF 20% 16V
2795	2238 586 59812	100nF 20-80% 50V 0603
2796	2238 586 59812	100nF 20-80% 50V 0603
2797	2238 586 59812	100nF 20-80% 50V 0603
2798	2238 586 59812	100nF 20-80% 50V 0603
2799	2238 586 59812	100nF 20-80% 50V 0603
2800	2238 586 59812	100nF 20-80% 50V 0603
2801	2238 586 59812	100nF 20-80% 50V 0603
2802	2238 586 59812	100nF 20-80% 50V 0603
2803	2238 586 59812	100nF 20-80% 50V 0603
2804	2238 586 59812	100nF 20-80% 50V 0603
2805	2238 586 59812	100nF 20-80% 50V 0603
2806	2020 021 91557	100µF 20% 16V
2807	2238 586 59812	100nF 20-80% 50V 0603
2808	2020 021 91554	10µF 20% 16V
2809	2238 586 59812	100nF 20-80% 50V 0603
2810	2238 586 59812	100nF 20-80% 50V 0603
2811	2238 586 59812	100nF 20-80% 50V 0603
2812	2238 586 59812	100nF 20-80% 50V 0603
2813	2238 586 59812	100nF 20-80% 50V 0603
2814	2238 586 59812	100nF 20-80% 50V 0603
2815	4822 126 14223	2.2pF +-0.25pF 50V 0603
2816	4822 126 14223	2.2pF +-0.25pF 50V 0603
2817	2238 586 59812	100nF 20-80% 50V 0603
2818	4822 126 14223	2.2pF +-0.25pF 50V 0603
2819	2238 586 59812	100nF 20-80% 50V 0603
2820	2238 586 59812	100nF 20-80% 50V 0603
2821	2238 586 59812	100nF 20-80% 50V 0603
2822	2238 586 59812	100nF 20-80% 50V 0603
2823	5322 126 11578	1nF 10% 50V 0603
2824	5322 126 11578	1nF 10% 50V 0603
2825	2238 586 59812	100nF 20-80% 50V 0603
2826	2238 586 59812	100nF 20-80% 50V 0603
2827	2238 586 59812	100nF 20-80% 50V 0603
2828	2238 586 59812	100nF 20-80% 50V 0603
2829	2238 586 59812	100nF 20-80% 50V 0603
2830	2238 586 59812	100nF 20-80% 50V 0603
2831	4822 126 13956	68pF 5% 63V 0603
2832	2238 586 59812	100nF 20-80% 50V 0603
2833	2238 586 59812	100nF 20-80% 50V 0603
2835	2238 586 59812	100nF 20-80% 50V 0603
2838	2238 586 59812	100nF 20-80% 50V 0603
2843	2238 586 59812	100nF 20-80% 50V 0603
2845	2238 586 59812	100nF 20-80% 50V 0603
2846	2238 586 59812	100nF 20-80% 50V 0603
2847	2238 586 59812	100nF 20-80% 50V 0603
2848	2238 586 59812	100nF 20-80% 50V 0603
2851	2238 586 59812	100nF 20-80% 50V 0603
2853	2238 586 59812	100nF 20-80% 50V 0603
2854	2238 586 59812	100nF 20-80% 50V 0603
2855	2238 586 59812	100nF 20-80% 50V 0603
2857	2238 586 59812	100nF 20-80% 50V 0603
2859	2238 586 59812	100nF 20-80% 50V 0603
2860	2238 586 59812	100nF 20-80% 50V 0603
2861	2238 586 59812	100nF 20-80% 50V 0603
2864	2238 586 59812	100nF 20-80% 50V 0603
2865	2238 586 59812	100nF 20-80% 50V 0603
2866	2238 586 59812	100nF 20-80% 50V 0603
2867	2238 586 59812	100nF 20-80% 50V 0603
2870	2020 021 91554	10µF 20% 16V
2871	2020 021 91554	10µF 20% 16V
2872	2238 586 59812	100nF 20-80% 50V 0603
2874	2020 021 91554	10µF 20% 16V
2880	2020 021 91557	100µF 20% 16V
2881	4822 126 11669	27pF 5% 50V 0603
2884	2238 586 59812	100nF 20-80% 50V 0603
2885	4822 126 11663	12pF 5% 50V 0603
2886	2238 586 59812	100nF 20-80% 50V 0603
2887	2238 586 59812	100nF 20-80% 50V 0603
2888	2238 586 59812	100nF 20-80% 50V 0603
2889	2238 586 59812	100nF 20-80% 50V 0603
2890	2238 586 59812	100nF 20-80% 50V 0603
2891	2238 586 59812	100nF 20-80% 50V 0603
2892	2238 586 59812	100nF 20-80% 50V 0603
2893	2238 586 59812	100nF 20-80% 50V 0603
2894	2238 586 59812	100nF 20-80% 50V 0603
2895	2238 586 59812	100nF 20-80% 50V 0603
2896	2238 586 59812	100nF 20-80% 50V 0603
2897	2238 586 59812	100nF 20-80% 50V 0603
2898	2238 586 59812	100nF 20-80% 50V 0603
2899	2238 586 59812	100nF 20-80% 50V 0603
2A00	2020 552 96618	1nF 10% 50V 0402
2A01	2020 021 91557	100µF 20% 16V
2A02	2020 552 96448	1µF 10% 16V
2A03	2020 021 91557	100µF 20% 16V
2A04	2020 552 96448	1µF 10% 16V
2A05	2020 021 91557	100µF 20% 16V
2A06	2020 552 96618	1nF 10% 50V 0402
2A07	2020 021 91557	100µF 20% 16V
2A08	2020 552 96448	1µF 10% 16V
2A09	5322 126 11583	10nF 10% 50V 0603
2A10	2238 586 59812	100nF 20-80% 50V 0603
2A11	2238 586 59812	100nF 20-80% 50V 0603
2A12	2020 552 96618	1nF 10% 50V 0402
2A13	2020 552 96618	1nF 10% 50V 0402
2A14	2020 552 96618	1nF 10% 50V 0402
2A15	2020 021 91557	100µF 20% 16V
2A16	2238 586 59812	100nF 20-80% 50V 0603
2A17	2020 552 96618	1nF 10% 50V 0402
2A18	2020 021 91557	100µF 20% 16V
2A19	3198 017 41050	1µF 10V 0603
2A20	2020 552 96448	1µF 10% 16V
2A21	2238 586 59812	100nF 20-80% 50V 0603
2A22	2238 586 59812	100nF 20-80% 50V 0603
2A23	2238 586 59812	100nF 20-80% 50V 0603
2A25	4822 126 14324	33pF 5% 50V 0402
2A26	2238 586 59812	100nF 20-80% 50V 0603
2A27	2020 552 96618	1nF 10% 50V 0402
2A28	2238 869 15101	100pF 5% 50V 0402
2A29	2238 869 15101	100pF 5% 50V 0402
2A30	4822 126 14324	33pF 5% 50V 0402
2A31	2238 586 59812	100nF 20-80% 50V 0603
2A32	2238 869 15101	100pF 5% 50V 0402
2A33	2238 586 59812	100nF 20-80% 50V 0603
2A34	2238 869 15101	100pF 5% 50V 0402
2A35	2020 552 96618	1nF 10% 50V 0402
2A36	4822 126 14324	33pF 5% 50V 0402
2A37	2238 869 15101	100pF 5% 50V 0402
2A38	2238 869 15101	100pF 5% 50V 0402
2A39	2020 552 96448	1µF 10% 16V
2A40	2238 586 59812	100nF 20-80% 50V 0603
2A41	2020 021 91554	10µF 20% 16V
2A42	2020 021 91554	10µF 20% 16V
2A43	2020 021 91554	10µF 20% 16V
2A44	2238 586 59812	100nF 20-80% 50V 0603
2A45	5322 126 11583	10nF 10% 50V 0603
2A46	2020 552 96448	1µF 10% 16V
2A47	2020 552 96618	1nF 10% 50V 0402
2A48	2020 552 96618	1nF 10% 50V 0402
2A49	2020 552 96448	1µF 10% 16V
2A50	2020 552 96618	1nF 10% 50V 0402
2A51	2020 552 96618	1nF 10% 50V 0402
2A52	2020 552 96618	1nF 10% 50V 0402
2A54	2020 552 96618	1nF 10% 50V 0402
2A57	2020 552 96618	1nF 10% 50V 0402
2A59	2020 552 96448	1µF 10% 16V
2A60	2020 552 96618	1nF 10% 50V 0402
2A61	2020 552 96618	1nF 10% 50V 0402
2A62	2020 552 96448	1µF 10% 16V
2A63	2020 552 96618	1nF 10% 50V 0402
2A64	2238 586 59812	100nF 20-80% 50V 0603
2A65	2020 552 96618	1nF 10% 50V 0402
2A66	2020 552 96448	1µF 10% 16V
2A67	2020 552 96448	1µF 10% 16V
2A68	2020 552 96618	1nF 10% 50V 0402
2A69	2020 552 96448	1µF 10% 16V
2A70	2020 552 96448	1µF 10% 16V
2A71	2020 552 96448	1µF 10% 16V
2A72	2020 552 96448	1µF 10% 16V
2A73	2020 552 96618	1nF 10% 50V 0402
2A74	2020 552 96448	1µF 10% 16V
2A75	2020 552 96448	1µF 10% 16V
2A76	2238 586 59812	100nF 20-80% 50V 0603
2A77	2020 552 96618	1nF 10% 50V 0402
2A78	2020 552 96618	1nF 10% 50V 0402
2A79	2238 586 59812	100nF 20-80% 50V 0603
2A80	2020 552 96448	1µF 10% 16V
2A81	2020 552 96618	1nF 10% 50V 0402
2A82	3198 017 31530	15nF 20% 50V 0603
2A83	2238 586 59812	100nF 20-80% 50V 0603
2A84	2238 869 15101	100pF 5% 50V 0402
2A85	2238 869 15101	100pF 5% 50V 0402
2A86	2238 869 15101	100pF 5% 50V 0402
2A87	2020 552 96618	1nF 10% 50V 0402
2A88	2238 586 59812	100nF 20-80% 50V 0603
2A89	2020 552 96448	1µF 10% 16V
2A90	2020 021 91685	22µF 20% 16V
2A91	2020 552 96448	1µF 10% 16V
2A92	2020 552 96448	1µF 10% 16V
2A93	2238 869 15101	100pF 5% 50V 0402
2A94	2238 869 15101	100pF 5% 50V 0402
2A95	4822 126 13883	220pF 5% 50V
2A96	2238 869 15101	100pF 5% 50V 0402
2A97	2238 869 15101	100pF 5% 50V 0402
2A98	2238 869 15101	100pF 5% 50V 0402
2A99	4822 126 14324	33pF 5% 50V 0402
2AA0	2238 869 15101	100pF 5% 50V 0402
2AA1	2238 869 15101	100pF 5% 50V 0402
2AA5	4822 126 14324	33pF 5% 50V 0402
2AA6	2020 552 96618	1nF 10% 50V 0402
2AA7	2020 552 96618	1nF 10% 50V 0402
2AA8	2020 552 96618	1nF 10% 50V 0402
2AA9	3198 016 35680	5.6pF 0.5pF 50V 0603
2AB0	3198 016 35680	5.6pF 0.5pF 50V 0603
2AB2	2020 552 96618	1nF 10% 50V 0402
2AB3	2020 552 96448	1µF 10% 16V
2AB4	2020 552 96448	1µF 10% 16V
2AB5	2020 021 91554	10µF 20% 16V
2AB8	2020 552 96448	1µF 10% 16V
2AB9	4822 122 33741	10pF 10% 50V
2AC0	4822 122 33741	10pF 10% 50V
2AD0	2020 552 96618	1nF 10% 50V 0402
2AD1	2020 552 96448	1µF 10% 16V
2AD3	2020 552 96448	1µF 10% 16V
2AD4	2020 552 96448	1µF 10% 16V
2AD5	2020 552 96618	1nF 10% 50V 0402
2AD6	2020 552 96618	1nF 10% 50V 0402
2AD7	2020 552 96618	1nF 10% 50V 0402
2AD8	4822 122 33741	10pF 10% 50V
2AD9	2020 552 96618	1nF 10% 50V 0402
2AE0	4822 122 33741	10pF 10% 50V
2AE1	4822 122 33741	10pF 10% 50V
2AE2	2020 552 96618	1nF 10% 50V 0402
2AE3	5322 126 11583	10nF 10% 50V 0603
2AE4	2238 586 59812	100nF 20-80% 50V 0603
2AE5	5322 126 11583	10nF 10% 50V 0603
2AE6	2238 586 59812	100nF 20-80% 50V 0603
2AE8	2238 586 59812	100nF 20-80% 50V 0603
2AF0	5322 126 11583	10nF 10% 50V 0603
2AF3	2020 021 91557	100µF 20% 16V
2AF4	2238 586 59812	100nF 20-80% 50V 0603
2AK0	2020 552 96448	1µF 10% 16V
2AK1	2020 552 96618	1nF 10% 50V 0402
2AK2	2020 552 96448	1µF 10% 16V
2AK3	2020 552 96618	1nF 10% 50V 0402
2AK4	2020 552 96448	1µF 10% 16V
2AK5	2020 552 96618	1nF 10% 50V 0402
2AK6	2238 586 59812	100nF 20-80% 50V 0603
2AK7	2020 021 91554	10µF 20% 16V
2AK8	2020 021 91554	10µF 20% 16V
2AK9	2020 021 91554	10µF 20% 16V
2AL0	2238 586 59812	100nF 20-80% 50V 0603
2AL1	2020 552 96448	1µF 10% 16V
2AL2	2020 552 96448	1µF 10% 16V

2AL3	2020 552 96618	1nF 10% 50V 0402
2AL4	2020 552 96618	1nF 10% 50V 0402
2AL5	2238 869 15101	100pF 5% 50V 0402
2AL6	2238 869 15101	100pF 5% 50V 0402
2AL8	2020 552 96448	1µF 10% 16V
2AL9	4822 126 14324	33pF 5% 50V 0402
2ALA	2020 552 96618	1nF 10% 50V 0402
2AM0	4822 126 14324	33pF 5% 50V 0402
2AM1	2238 586 59812	100nF 20-80% 50V 0603
2AM2	2238 586 59812	100nF 20-80% 50V 0603
2AM3	2020 552 96618	1nF 10% 50V 0402
2AM4	2238 869 15101	100pF 5% 50V 0402
2AM5	2020 552 96448	1µF 10% 16V
2AM6	2238 586 59812	100nF 20-80% 50V 0603
2AM7	2020 552 96618	1nF 10% 50V 0402
2AM8	2238 869 15101	100pF 5% 50V 0402
2AM9	4822 126 14324	33pF 5% 50V 0402
2AN0	2020 552 96448	1µF 10% 16V
2AN1	4822 126 14324	33pF 5% 50V 0402
2AN2	3198 016 31020	1nF 10% 25V 0603
2AN3	4822 122 33741	10pF 10% 50V
2AN4	4822 122 33741	10pF 10% 50V
2AN5	2238 586 59812	100nF 20-80% 50V 0603
2AN6	2020 021 91554	10µF 20% 16V
2AN7	5322 126 11583	10nF 10% 50V 0603
2AN8	4822 122 33741	10pF 10% 50V
2AN9	4822 122 33741	10pF 10% 50V
2C00	2238 586 59812	100nF 20-80% 50V 0603
2C01	2238 586 59812	100nF 20-80% 50V 0603
2C02	2238 586 59812	100nF 20-80% 50V 0603
2I01	2238 586 59812	100nF 20-80% 50V 0603
2I04	4822 126 13879	220nF 20% 16V
2I05	4822 126 13879	220nF 20% 16V
2I07	4822 126 13879	220nF 20% 16V
2I09	2020 552 94427	100pF 5% 50v 0603
2I10	2020 552 94427	100pF 5% 50v 0603
2I11	2020 552 94427	100pF 5% 50v 0603
2I12	4822 126 14241	330pF 50V 0603
2I13	2020 552 94427	100pF 5% 50v 0603
2I14	2020 552 94427	100pF 5% 50v 0603
2I15	4822 126 14241	330pF 50V 0603
2I16	2020 552 94427	100pF 5% 50v 0603
2I17	2020 552 94427	100pF 5% 50v 0603
2I18	2020 552 94427	100pF 5% 50v 0603
2I19	2020 552 94427	100pF 5% 50v 0603
2I20	4822 126 14241	330pF 50V 0603
2I21	2020 552 94427	100pF 5% 50v 0603
2I22	2020 552 94427	100pF 5% 50v 0603
2I23	2020 552 94427	100pF 5% 50v 0603
2I24	2020 552 94427	100pF 5% 50v 0603
2I25	4822 126 14241	330pF 50V 0603
2I26	2020 552 94427	100pF 5% 50v 0603
2I27	2020 552 94427	100pF 5% 50v 0603
2I28	2020 552 94427	100pF 5% 50v 0603
2I29	2020 552 94427	100pF 5% 50v 0603
2I30	2020 552 94427	100pF 5% 50v 0603
2I31	4822 124 23002	10µF 20% 16V
2I32	4822 124 23002	10µF 20% 16V
2I33	2020 552 94427	100pF 5% 50v 0603
2I34	2020 552 94427	100pF 5% 50v 0603
2I35	2020 552 94427	100pF 5% 50v 0603
2I36	2020 552 94427	100pF 5% 50v 0603
2I38	2020 552 96448	1µF 10% 16V
2I41	2020 552 96448	1µF 10% 16V
2I42	2020 552 94427	100pF 5% 50v 0603
2I44	2020 552 94427	100pF 5% 50v 0603
2I46	3198 016 31020	1nF 10% 25V 0603
2I47	3198 016 31020	1nF 10% 25V 0603
2I71	2020 552 96448	1µF 10% 16V
2I72	2020 552 96448	1µF 10% 16V
2I73	2020 552 96448	1µF 10% 16V
2I74	2020 552 96448	1µF 10% 16V
2I75	2020 552 96448	1µF 10% 16V
2I76	2020 552 96448	1µF 10% 16V
2I77	2020 552 96448	1µF 10% 16V
2I78	2020 552 96448	1µF 10% 16V
2I79	5322 124 41945	22µF 20% 35V SMD
2I80	2020 552 96448	1µF 10% 16V
2I81	2020 552 96448	1µF 10% 16V
2I82	2020 552 96448	1µF 10% 16V
2I83	2020 552 96448	1µF 10% 16V
2I84	2020 552 96448	1µF 10% 16V
2I85	2020 552 96448	1µF 10% 16V
2I99	2020 552 96448	1µF 10% 16V
2IA0	2020 552 96448	1µF 10% 16V
2IA1	2020 552 96448	1µF 10% 16V
2IA2	2020 552 96448	1µF 10% 16V
2IA3	2238 586 59812	100nF 20-80% 50V 0603
2IA4	2020 552 96448	1µF 10% 16V
2IA5	2020 021 91557	100µF 20% 16V
2IA7	2020 552 96448	1µF 10% 16V
2IA9	2020 021 91557	100µF 20% 16V
2IC0	4822 124 23002	10µF 20% 16V
2IC1	4822 124 23002	10µF 20% 16V

2IC2	4822 124 23002	10µF 20% 16V
2IC3	2238 586 59812	100nF 20-80% 50V 0603
2IC4	2238 586 59812	100nF 20-80% 50V 0603
2IC9	4822 126 13881	470pF 5% 50V
2IE0	4822 126 13879	220nF 20% 16V
2IG1	2238 586 59812	100nF 20-80% 50V 0603
2IH0	2238 586 59812	100nF 20-80% 50V 0603
2IH1	2238 586 59812	100nF 20-80% 50V 0603
2IH3	3198 016 31020	1nF 10% 25V 0603
2IJ0	4822 126 13881	470pF 5% 50V
2IJ1	2020 552 94427	100pF 5% 50v 0603
2IJ4	2238 586 59812	100nF 20-80% 50V 0603
2P00	2238 586 59812	100nF 20-80% 50V 0603
2P01	4822 124 12095	100µF 20% 16V
2P02	2238 586 59812	100nF 20-80% 50V 0603
2P03	4822 126 13193	4.7nF 10% 63V
2P04	4822 126 13193	4.7nF 10% 63V
2P06	4822 126 13883	220pF 5% 50V
2P07	4822 126 13956	68pF 5% 63V 0603
2P08	3198 016 32780	2.7pF 10% 50V 0603
2P10	2238 586 59812	100nF 20-80% 50V 0603
2P11	2238 586 59812	100nF 20-80% 50V 0603
2P12	2238 586 59812	100nF 20-80% 50V 0603
2P13	2238 586 59812	100nF 20-80% 50V 0603
2P14	2238 586 59812	100nF 20-80% 50V 0603
2P15	2238 586 59812	100nF 20-80% 50V 0603
2P16	2238 586 59812	100nF 20-80% 50V 0603
2P17	3198 017 44740	470nF 10V 0603
2P18	3198 016 35680	5.6pF 0.5pF 50V 0603
2P19	2238 586 59812	100nF 20-80% 50V 0603
2P20	2020 552 96448	1µF 10% 16V
2P21	4822 126 14491	2.2µF -20+80% 10V 0805
2P23	2238 586 59812	100nF 20-80% 50V 0603
2P24	2238 586 59812	100nF 20-80% 50V 0603
2P25	4822 124 23002	10µF 20% 16V
2P26	2238 916 15641	22nF 10% 25V 0603
2P27	4822 126 14491	2.2µF -20+80% 10V 0805
2P28	2238 586 59812	100nF 20-80% 50V 0603
2P29	3198 017 41050	1µF 10V 0603
2P30	4822 126 13193	4.7nF 10% 63V
2P31	2238 586 59812	100nF 20-80% 50V 0603
2P32	2238 586 59812	100nF 20-80% 50V 0603
2P33	2238 586 59812	100nF 20-80% 50V 0603
2P34	2238 586 59812	100nF 20-80% 50V 0603
2P35	2238 586 59812	100nF 20-80% 50V 0603
2P36	5322 126 11579	3.3nF 10% 63V
2P37	4822 122 33752	15pF 5% 50V
2P38	3198 016 31280	1.2pF 50V 0603
2P43	4822 126 11663	12pF 5% 50V 0603
2P44	3198 016 31280	1.2pF 50V 0603
2P45	2238 586 59812	100nF 20-80% 50V 0603
2P46	2238 586 59812	100nF 20-80% 50V 0603
2P47	2238 586 59812	100nF 20-80% 50V 0603
2P48	4822 126 11785	47pF 5% 50V 0603
2P57	3198 017 34730	47nF 16V 0603
2P58	3198 017 34730	47nF 16V 0603
2P60	3198 017 41050	1µF 10V 0603
2P64	3198 017 41050	1µF 10V 0603
2P65	4822 124 12095	100µF 20% 16V
2P66	2238 586 59812	100nF 20-80% 50V 0603
2P70	2238 586 59812	100nF 20-80% 50V 0603
2P71	4822 124 23002	10µF 20% 16V
2P72	4822 126 14491	2.2µF -20+80% 10V 0805
2P73	2020 552 96448	1µF 10% 16V
2P74	2238 586 59812	100nF 20-80% 50V 0603
2P75	2020 552 96448	1µF 10% 16V
2P78	2238 586 59812	100nF 20-80% 50V 0603
2P79	2238 586 59812	100nF 20-80% 50V 0603
2P80	4822 124 12095	100µF 20% 16V
2P81	2238 586 59812	100nF 20-80% 50V 0603
2P83	3198 017 34730	47nF 16V 0603
2P85	3198 017 34730	47nF 16V 0603
2P90	4822 124 12095	100µF 20% 16V
2P98	4822 124 12095	100µF 20% 16V
2P99	4822 124 12095	100µF 20% 16V
2PA0	3198 017 41050	1µF 10V 0603
2PA1	4822 122 33753	150pF 5% 50V
2PA2	2238 586 59812	100nF 20-80% 50V 0603
2PA3	4822 122 33753	150pF 5% 50V
2PA4	2238 586 59812	100nF 20-80% 50V 0603
2PA5	4822 122 33753	150pF 5% 50V
2PA6	2238 586 59812	100nF 20-80% 50V 0603
2PA7	2238 586 59812	100nF 20-80% 50V 0603
2PA8	2238 586 59812	100nF 20-80% 50V 0603
2PA9	4822 124 23002	10µF 20% 16V
2PB0	3198 017 41050	1µF 10V 0603
2PB1	4822 122 33753	150pF 5% 50V
2PB2	2238 586 59812	100nF 20-80% 50V 0603
2PB3	2238 586 59812	100nF 20-80% 50V 0603
2PB4	4822 122 33753	150pF 5% 50V
2PB6	2238 586 59812	100nF 20-80% 50V 0603
2PB7	2238 586 59812	100nF 20-80% 50V 0603
2PB8	4822 124 23002	10µF 20% 16V
2PB9	2238 586 59812	100nF 20-80% 50V 0603

2PC0	4822 124 23002	10µF 20% 16V
2PC1	2238 586 59812	100nF 20-80% 50V 0603
2PC2	2238 586 59812	100nF 20-80% 50V 0603
2PC4	2238 586 59812	100nF 20-80% 50V 0603
2PC5	2238 586 59812	100nF 20-80% 50V 0603
2PC7	2238 586 59812	100nF 20-80% 50V 0603
2PC8	2238 586 59812	100nF 20-80% 50V 0603
2PC9	2238 586 59812	100nF 20-80% 50V 0603
2PD0	4822 124 23002	10µF 20% 16V
2PD1	2238 586 59812	100nF 20-80% 50V 0603
2PD3	2238 586 59812	100nF 20-80% 50V 0603
2PD4	2238 586 59812	100nF 20-80% 50V 0603
2PD5	4822 124 23002	10µF 20% 16V
2PD6	4822 124 23002	10µF 20% 16V
2PD7	2238 586 59812	100nF 20-80% 50V 0603
2PD9	2238 586 59812	100nF 20-80% 50V 0603
2PE4	2238 586 59812	100nF 20-80% 50V 0603
2PE5	2238 586 59812	100nF 20-80% 50V 0603
2PE6	2238 586 59812	100nF 20-80% 50V 0603
2PE7	2238 586 59812	100nF 20-80% 50V 0603
2PE8	2238 586 59812	100nF 20-80% 50V 0603
2PE9	3198 017 41050	1µF 10V 0603
2PF1	4822 124 23002	10µF 20% 16V
2PF2	2238 586 59812	100nF 20-80% 50V 0603
2PF3	4822 122 33753	150pF 5% 50V
2PF7	4822 124 23002	10µF 20% 16V
2PF8	4822 124 23002	10µF 20% 16V
2PF9	4822 124 23002	10µF 20% 16V
2S01	2238 586 59812	100nF 20-80% 50V 0603
2S02	2238 586 59812	100nF 20-80% 50V 0603
2S03	2238 586 59812	100nF 20-80% 50V 0603
2S04	2238 586 59812	100nF 20-80% 50V 0603
2S05	2238 586 59812	100nF 20-80% 50V 0603
2S22	3198 017 44740	470nF 10V 0603
2S42	4822 051 30759	75Ω 5% 0.062W
2T01	2020 021 91642	470µF 20% 16V
2T02	3198 024 44730	47nF 50V 0603
2T03	2020 021 91642	470µF 20% 16V
2T04	3198 024 44730	47nF 50V 0603
2T05	2020 021 91642	470µF 20% 16V
2T06	5322 126 11583	10nF 10% 50V 0603
2T09	3198 017 34730	47nF 16V 0603
2T10	3198 017 34730	47nF 16V 0603
2T12	2238 586 59812	100nF 20-80% 50V 0603
2T13	5322 126 11583	10nF 10% 50V 0603
2T14	5322 126 11583	10nF 10% 50V 0603
2T15	3198 017 34730	47nF 16V 0603
2T16	3198 017 34730	47nF 16V 0603
2U03	4822 126 14043	1µF 20% 16V
2U04	4822 126 13482	470nF 80-20% 16V
2U05	5322 126 11578	1nF 10% 50V 0603
2U06	2020 021 91642	470µF 20% 16V
2U07	4822 126 14226	82pF 5% 50V 0603
2U08	2020 021 91642	470µF 20% 16V
2U09	5322 126 11578	1nF 10% 50V 0603
2U10	2020 021 91642	470µF 20% 16V
2U11	5322 126 11578	1nF 10% 50V 0603
2U12	5322 126 11583	10nF 10% 50V 0603
2U13	3198 017 44740	470nF 10V 0603
2U14	4822 126 13482	470nF 80-20% 16V
2U15	4822 124 12095	100µF 20% 16V
2U16	4822 126 13193	4.7nF 10% 63V
2U17	4822 126 13482	470nF 80-20% 16V
2U18	5322 122 33861	120pF10% 50V
2U19	2238 586 59812	100nF 20-80% 50V 0603
2U20	4822 126 14491	2.2µF -20+80% 10V 0805
2U21	4822 126 13482	470nF 80-20% 16V
2U22	4822 126 14491	2.2µF -20+80% 10V 0805
2U23	4822 124 12095	100µF 20% 16V
2U24	5322 126 11578	1nF 10% 50V 0603
2U25	2238 586 59812	100nF 20-80% 50V 0603
2U26	2238 586 59812	100nF 20-80% 50V 0603
2U27	5322 126 11582	6.8nF 10% 63V
2U28	5322 126 11582	6.8nF 10% 63V
2U30	5322 122 33861	120pF10% 50V
2U31	4822 124 12095	100µF 20% 16V
2U32	5322 126 11579	3.3nF 10% 63V

3001	4822 051 30472	4.7kΩ 5% 0.062W
3002	4822 051 30472	4.7kΩ 5% 0.062W
3003	4822 117 13525	24kΩ 1% 0.62W 0603
3005	4822 051 30103	10kΩ 5% 0.062W
3006	4822 051 30471	470Ω 5% 0.062W
3007	3198 031 14710	4 x 470Ω 5% 1206
3008	4822 117 13526	150Ω 5% 0.63W
3009	4822 051 30689	68Ω 5% 0.063W 0603
3010	4822 051 30103	10kΩ 5% 0.062W
3011	4822 051 30103	10kΩ 5% 0.062W
3012	3198 031 11010	4 x 100Ω 5% 1206
3013	4822 051 30103	10kΩ 5% 0.062W
3014	4822 051 30682	6.8kΩ 5% 0.062W

3015	4822 051 30474	470kΩ 5% 0.062W
3016	4822 051 30152	1.5kΩ 5% 0.062W
3017	4822 051 30472	4.7kΩ 5% 0.062W
3018	4822 051 30103	10kΩ 5% 0.062W
3019	4822 051 30472	4.7kΩ 5% 0.062W
3020	4822 051 30103	10kΩ 5% 0.062W
3021	4822 051 30103	10kΩ 5% 0.062W
3024	4822 051 30273	27kΩ 5% 0.062W
3025	4822 051 30221	220Ω 5% 0.062W
3026	4822 051 30472	4.7kΩ 5% 0.062W
3027	4822 117 12925	47kΩ 1% 0.063W 0603
3029	3198 031 11010	4 x 100Ω 5% 1206
3031	3198 031 11010	4 x 100Ω 5% 1206
3033	4822 051 30103	10kΩ 5% 0.062W
3034	3198 031 11010	4 x 100Ω 5% 1206
3035	3198 031 11010	4 x 100Ω 5% 1206
3039	4822 051 30008	Jumper 0603
3040	4822 051 30472	4.7kΩ 5% 0.062W
3042	4822 051 30472	4.7kΩ 5% 0.062W
3047	4822 051 30008	Jumper 0603
3048	3198 031 11010	4 x 100Ω 5% 1206
3049	3198 031 11010	4 x 100Ω 5% 1206
3050	3198 031 11010	4 x 100Ω 5% 1206
3051	3198 031 11010	4 x 100Ω 5% 1206
3052	3198 031 11010	4 x 100Ω 5% 1206
3053	4822 051 30103	10kΩ 5% 0.062W
3054	3198 031 11010	4 x 100Ω 5% 1206
3055	3198 031 11010	4 x 100Ω 5% 1206
3056	3198 031 11010	4 x 100Ω 5% 1206
3057	3198 031 11010	4 x 100Ω 5% 1206
3059	2322 704 66201	620Ω 1% 0603
3061	3198 031 11010	4 x 100Ω 5% 1206
3062	4822 051 30103	10kΩ 5% 0.062W
3064	3198 031 11010	4 x 100Ω 5% 1206
3065	4822 051 30472	4.7kΩ 5% 0.062W
3066	4822 117 12925	47kΩ 1% 0.063W 0603
3067	4822 051 30474	470kΩ 5% 0.062W
3068	4822 051 30272	2.7kΩ 5% 0.062W
3069	4822 051 30272	2.7kΩ 5% 0.062W
3072	3198 031 11010	4 x 100Ω 5% 1206
3073	3198 031 14710	4 x 470Ω 5% 1206
3074	3198 031 14710	4 x 470Ω 5% 1206
3076	3198 031 14710	4 x 470Ω 5% 1206
3078	3198 031 14710	4 x 470Ω 5% 1206
3079	4822 051 30272	2.7kΩ 5% 0.062W
3080	4822 051 30472	4.7kΩ 5% 0.062W
3081	4822 051 30471	470Ω 5% 0.062W
3082	3198 031 11010	4 x 100Ω 5% 1206
3083	3198 031 11010	4 x 100Ω 5% 1206
3084	4822 051 30103	10kΩ 5% 0.062W
3085	3198 031 11010	4 x 100Ω 5% 1206
3086	3198 031 11010	4 x 100Ω 5% 1206
3087	4822 051 30101	100Ω 5% 0.062W
3088	4822 051 30222	2.2kΩ 5% 0.062W
3089	4822 051 30101	100Ω 5% 0.062W
3090	3198 031 14710	4 x 470Ω 5% 1206
3091	4822 051 30008	Jumper 0603
3092	4822 051 30222	2.2kΩ 5% 0.062W
3093	4822 051 30103	10kΩ 5% 0.062W
3094	4822 117 12925	47kΩ 1% 0.063W 0603
3095	4822 117 12925	47kΩ 1% 0.063W 0603
3096	4822 117 12925	47kΩ 1% 0.063W 0603
3097	4822 051 30471	470Ω 5% 0.062W
3099	3198 031 14710	4 x 470Ω 5% 1206
3100	4822 051 30221	220Ω 5% 0.062W
3101	4822 051 30221	220Ω 5% 0.062W
3102	3198 031 11010	4 x 100Ω 5% 1206
3301	4822 117 13632	100kΩ 1% 0603 0.62W
3302	4822 051 30102	1kΩ 5% 0.062W
3303	4822 117 13632	100kΩ 1% 0603 0.62W
3304⚠	2322 750 63908	3.9Ω 5% Fuse 1206
3306	4822 051 30221	220Ω 5% 0.062W
3307	4822 051 30183	18kΩ 5% 0.062W
3308	4822 051 20474	470kΩ 5% 0.1W
3310	4822 051 30563	56kΩ 5% 0.062W
3311	4822 117 13632	100kΩ 1% 0603 0.62W
3312	4822 117 13632	100kΩ 1% 0603 0.62W
3313	4822 117 13632	100kΩ 1% 0603 0.62W
3314	4822 051 30103	10kΩ 5% 0.062W
3315	4822 051 30102	1kΩ 5% 0.062W
3316	4822 117 10834	47kΩ 1% 0.1W
3317	4822 051 30221	220Ω 5% 0.062W
3318	4822 051 30102	1kΩ 5% 0.062W
3319	4822 051 30102	1kΩ 5% 0.062W
3320	4822 051 30101	100Ω 5% 0.062W
3321	4822 051 30101	100Ω 5% 0.062W
3322	4822 051 10102	1kΩ 2% 0.25W
3323	4822 117 12925	47kΩ 1% 0.063W 0603
3324	4822 051 30472	4.7kΩ 5% 0.062W
3327	4822 117 13632	100kΩ 1% 0603 0.62W
3328	4822 051 30393	39kΩ 5% 0.062W
3329	4822 117 13568	6.8Ω 5% 1206
3331	4822 051 30102	1kΩ 5% 0.062W
3333	4822 051 30102	1kΩ 5% 0.062W
3334	4822 051 30102	1kΩ 5% 0.062W
3336	4822 051 30102	1kΩ 5% 0.062W
3337	3198 031 08210	820Ω 5% 0,5W
3338	4822 051 30681	680Ω 5% 0.062W
3340	4822 051 30101	100Ω 5% 0.062W
3341	4822 051 30101	100Ω 5% 0.062W
3342	4822 051 30101	100Ω 5% 0.062W
3343	4822 051 20683	68kΩ 5% 0.1W
3344	4822 051 30222	2.2kΩ 5% 0.062W
3345	4822 051 30103	10kΩ 5% 0.062W
3346	4822 051 30333	33kΩ 5% 0.062W
3347	4822 051 30223	22kΩ 5% 0.062W
3348	4822 051 30222	2.2kΩ 5% 0.062W
3349	4822 051 30472	4.7kΩ 5% 0.062W
3356	4822 051 30222	2.2kΩ 5% 0.062W
3357	4822 051 30392	3.9kΩ 5% 0.063W 0603
3362	4822 051 30392	3.9kΩ 5% 0.063W 0603
3363	4822 051 30102	1kΩ 5% 0.062W
3364	3198 031 16840	4X680kΩ 5% 1206
3365	4822 051 30472	4.7kΩ 5% 0.062W
3366	4822 051 30221	220Ω 5% 0.062W
3367	4822 051 30221	220Ω 5% 0.062W
3368	3198 021 32250	2.2MΩ 5% 0603
3369	3198 031 08210	820Ω 5% 0,5W
3370	4822 051 30101	100Ω 5% 0.062W
3371	4822 051 30479	47Ω 5% 0.062W
3372	4822 051 30471	470Ω 5% 0.062W
3373	4822 051 30008	Jumper 0603
3374	4822 051 30008	Jumper 0603
3375	4822 051 30008	Jumper 0603
3376	4822 051 30101	100Ω 5% 0.062W
3377	4822 051 30101	100Ω 5% 0.062W
3378	4822 051 30153	15kΩ 5% 0.062W
3379	4822 051 30008	Jumper 0603
3380	4822 051 30101	100Ω 5% 0.062W
3381	4822 051 30008	Jumper 0603
3382	4822 051 30561	560Ω 5% 0.062W
3383	4822 051 30681	680Ω 5% 0.062W
3384	3198 031 08210	820Ω 5% 0,5W
3385	4822 051 30471	470Ω 5% 0.062W
3386	4822 117 12891	220kΩ 1% 0.063W 0603
3389	4822 051 30681	680Ω 5% 0.062W
3390	4822 051 30221	220Ω 5% 0.062W
3391	4822 051 30103	10kΩ 5% 0.062W
3393	4822 117 13632	100kΩ 1% 0603 0.62W
3394	4822 051 30472	4.7kΩ 5% 0.062W
3400	4822 117 11152	4.7Ω 5% 0.062W
3402⚠	2322 750 63908	3.9Ω 5% Fuse 1206
3403	4822 051 30101	100Ω 5% 0.062W
3404	4822 051 30561	560Ω 5% 0.062W
3405	4822 051 30102	1kΩ 5% 0.062W
3406	2322 702 60279	27Ω 5% 0.1W 0603
3408	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30272	2.7kΩ 5% 0.062W
3412	4822 117 11152	4.7Ω 5% 0.062W
3414	4822 051 30472	4.7kΩ 5% 0.062W
3415	4822 051 30222	2.2kΩ 5% 0.062W
3418	4822 051 30391	390Ω 5% 0.062W
3419	2120 108 91909	39Ω 5% 0603
3435	4822 051 30472	4.7kΩ 5% 0.062W
3436	4822 051 30181	180Ω 5% 0.062W
3437	4822 051 30471	470Ω 5% 0.062W
3439	4822 051 30391	390Ω 5% 0.062W
3441	4822 051 30562	5.6kΩ 5% 0.063W 0603
3445	4822 051 30121	120Ω 5% 0.062W
3463	4822 051 30472	4.7kΩ 5% 0.062W
3468	4822 117 13632	100kΩ 1% 0603 0.62W
3472	4822 051 30223	22kΩ 5% 0.062W
3473	4822 051 30102	1kΩ 5% 0.062W
3474	4822 051 30109	10Ω 5% 0.062W
3475	5322 117 11726	10Ω 5%
3476	4822 051 30561	560Ω 5% 0.062W
3703	4822 051 30271	270Ω 5% 0.062W
3704	5322 117 13047	330Ω 1% 0.063W 0603
3705	5322 117 13047	330Ω 1% 0.063W 0603
3709	4822 051 30101	100Ω 5% 0.062W
3710	4822 051 30101	100Ω 5% 0.062W
3711	4822 117 12925	47kΩ 1% 0.063W 0603
3712	4822 117 12925	47kΩ 1% 0.063W 0603
3713	4822 051 30181	180Ω 5% 0.062W
3714	4822 051 30181	180Ω 5% 0.062W
3715	4822 051 30181	180Ω 5% 0.062W
3716	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3719	4822 051 30332	3.3kΩ 5% 0.062W
3720	4822 051 30103	10kΩ 5% 0.062W
3721	4822 117 12917	1Ω 5% 0.062W 0603
3725	4822 051 30332	3.3kΩ 5% 0.062W
3726	4822 117 11817	1.2kΩ 1% 1/16W
3727	4822 051 30151	150Ω 5% 0.062W
3728	4822 051 30151	150Ω 5% 0.062W
3729	4822 051 30689	68Ω 5% 0.063W 0603
3730	3198 031 06810	680Ω 5% 0.01W 0402
3731	4822 051 30472	4.7kΩ 5% 0.062W
3733	4822 051 30472	4.7kΩ 5% 0.062W
3735	4822 117 12917	1Ω 5% 0.062W 0603
3736	4822 051 30101	100Ω 5% 0.062W
3737	4822 051 30102	1kΩ 5% 0.062W
3738	4822 051 30102	1kΩ 5% 0.062W
3739	3198 031 01530	15kΩ 5% 0.01W 0402
3740	4822 051 30102	1kΩ 5% 0.062W
3741	4822 051 30183	18kΩ 5% 0.062W
3742	4822 051 30183	18kΩ 5% 0.062W
3744	4822 051 30222	2.2kΩ 5% 0.062W
3745	4822 051 30102	1kΩ 5% 0.062W
3746	4822 051 30392	3.9kΩ 5% 0.063W 0603
3747	4822 051 30154	150kΩ 5% 0.062W
3748	4822 117 12891	220kΩ 1% 0.063W 0603
3749	4822 051 30392	3.9kΩ 5% 0.063W 0603
3750	4822 051 30332	3.3kΩ 5% 0.062W
3751	4822 051 30472	4.7kΩ 5% 0.062W
3752	4822 117 12917	1Ω 5% 0.062W 0603
3753	4822 117 12917	1Ω 5% 0.062W 0603
3754	4822 051 30101	100Ω 5% 0.062W
3755	4822 051 30472	4.7kΩ 5% 0.062W
3756	4822 117 12902	8.2kΩ 1% 0.063W 0603
3757	4822 051 30479	47Ω 5% 0.062W
3758	4822 051 30472	4.7kΩ 5% 0.062W
3759	4822 051 30221	220Ω 5% 0.062W
3762	4822 051 30101	100Ω 5% 0.062W
3763	4822 117 12139	22Ω 5% 0.062W
3764	4822 051 30109	10Ω 5% 0.062W
3768	2350 033 10101	4X100Ω 5%
3769	2350 033 10101	4X100Ω 5%
3770	4822 117 13545	100Ω 1% 0402
3771	4822 117 12971	15Ω 5% 0.62W 0603
3772	4822 117 12971	15Ω 5% 0.62W 0603
3773	4822 117 12925	47kΩ 1% 0.063W 0603
3774	4822 117 12925	47kΩ 1% 0.063W 0603
3775	2350 033 10101	4X100Ω 5%
3776	2350 033 10101	4X100Ω 5%
3781	4822 117 12925	47kΩ 1% 0.063W 0603
3782	4822 117 12925	47kΩ 1% 0.063W 0603
3783	4822 117 12925	47kΩ 1% 0.063W 0603
3785	4822 117 13577	330Ω 1% 0805 1.25W
3786	4822 117 13577	330Ω 1% 0805 1.25W
3787	4822 117 13577	330Ω 1% 0805 1.25W
3788	5322 117 13034	1.5kΩ 1% 0.063W 0603
3789	5322 117 13043	220Ω 1% 0.063W 0603
3790	5322 117 13059	560Ω 1% 0.063W 0603
3791	5322 117 13049	470Ω 1% 0.063W 0603
3792	4822 051 30102	1kΩ 5% 0.062W
3793	4822 051 30222	2.2kΩ 5% 0.062W
3800	5322 117 13058	150Ω 1% 0.063W 0603
3801	4822 051 30102	1kΩ 5% 0.062W
3802	5322 117 13058	150Ω 1% 0.063W 0603
3803	5322 117 13058	150Ω 1% 0.063W 0603
3804	4822 051 30102	1kΩ 5% 0.062W
3805	5322 117 13049	470Ω 1% 0.063W 0603
3806	5322 117 13049	470Ω 1% 0.063W 0603
3807	5322 117 13068	82Ω 1% 0.063W 0603
3808	5322 117 13057	820Ω 1% 0.063W 0603
3809	5322 117 13043	220Ω 1% 0.063W 0603
3810	4822 051 30391	390Ω 5% 0.062W
3811	4822 051 30759	75Ω 5% 0.062W
3812	4822 051 30759	75Ω 5% 0.062W
3813	4822 051 30391	390Ω 5% 0.062W
3814	4822 051 30759	75Ω 5% 0.062W
3815	4822 051 30759	75Ω 5% 0.062W
3816	4822 051 30391	390Ω 5% 0.062W
3817	4822 051 30759	75Ω 5% 0.062W
3818	4822 051 30759	75Ω 5% 0.062W
3819	4822 051 30759	75Ω 5% 0.062W
3820	4822 051 30759	75Ω 5% 0.062W
3821	4822 051 30759	75Ω 5% 0.062W
3822	4822 051 30759	75Ω 5% 0.062W
3823	4822 051 30759	75Ω 5% 0.062W
3824	4822 051 30759	75Ω 5% 0.062W
3825	5322 117 13058	150Ω 1% 0.063W 0603
3826	5322 117 13058	150Ω 1% 0.063W 0603
3827	5322 117 13058	150Ω 1% 0.063W 0603
3828	4822 051 30339	33Ω 5% 0.062W
3829	4822 117 12971	15Ω 5% 0.62W 0603
3830	4822 117 13545	100Ω 1% 0402
3831	4822 117 13545	100Ω 1% 0402
3832	4822 117 13545	100Ω 1% 0402
3833	4822 117 13545	100Ω 1% 0402
3834	4822 117 13545	100Ω 1% 0402
3836	4822 117 13545	100Ω 1% 0402
3837	4822 117 13545	100Ω 1% 0402
3838	4822 117 13545	100Ω 1% 0402
3839	4822 117 13545	100Ω 1% 0402
3840	4822 117 13545	100Ω 1% 0402
3841	4822 117 13545	100Ω 1% 0402
3842	4822 117 13545	100Ω 1% 0402
3843	4822 117 13545	100Ω 1% 0402
3844	4822 117 13545	100Ω 1% 0402

3845	4822 117 13545	100Ω 1% 0402
3A00	4822 051 30223	22kΩ 5% 0.062W
3A01	3198 031 04720	4.7kΩ 5% 0402
3A02	4822 117 13545	100Ω 1% 0402
3A03	4822 117 13568	6.8Ω 5% 1206
3A05	4822 117 13545	100Ω 1% 0402
3A06	4822 117 13545	100Ω 1% 0402
3A08	4822 117 13545	100Ω 1% 0402
3A09	4822 117 13601	22kΩ 5% 0402
3A11	4822 117 11297	100kΩ 5% 0.1W
3A12	3198 031 04730	47Ω 5% 0402
3A13	3198 031 04730	47Ω 5% 0402
3A14	3198 031 04730	47Ω 5% 0402
3A15	4822 117 11297	100kΩ 5% 0.1W
3A16	4822 117 13545	100Ω 1% 0402
3A17	4822 117 13545	100Ω 1% 0402
3A18	3198 031 04730	47Ω 5% 0402
3A19	4822 117 13545	100Ω 1% 0402
3A20	4822 117 11297	100kΩ 5% 0.1W
3A21	4822 117 12903	1.8kΩ 1% 0.063W 0603
3A22	4822 117 13632	100kΩ 1% 0603 0.62W
3A23	3198 031 06830	68kΩ 5% 0.01W 0402
3A25	4822 051 30331	330Ω 5% 0.062W
3A26	3198 031 06830	68kΩ 5% 0.01W 0402
3A27	3198 031 06820	6.8kΩ 5% 0.01W 0402
3A28	3198 031 06820	6.8kΩ 5% 0.01W 0402
3A29	4822 051 30331	330Ω 5% 0.062W
3A30	4822 117 12925	47kΩ 1% 0.063W 0603
3A31	4822 117 13548	1kΩ 5% 0402
3A32	4822 117 13545	100Ω 1% 0402
3A33	4822 117 13545	100Ω 1% 0402
3A34	4822 117 13545	100Ω 1% 0402
3A35	4822 051 30105	1MΩ 5% 0.062W
3A36	4822 117 13545	100Ω 1% 0402
3A37	4822 117 13545	100Ω 1% 0402
3A38	4822 051 30101	100Ω 5% 0.062W
3A39	4822 117 13545	100Ω 1% 0402
3A3A	4822 117 13545	100Ω 1% 0402
3A3B	4822 117 13545	100Ω 1% 0402
3A3E	4822 117 13545	100Ω 1% 0402
3A3F	4822 117 13545	100Ω 1% 0402
3A40	4822 117 13632	100kΩ 1% 0603 0.62W
3A42	3198 031 03320	3.3kΩ 5% 0402
3A43	4822 117 13545	100Ω 1% 0402
3A44	4822 117 13545	100Ω 1% 0402
3A45	3198 031 04730	47Ω 5% 0402
3A46	4822 117 11297	100kΩ 5% 0.1W
3A47	3198 031 04730	47Ω 5% 0402
3A48	4822 117 11297	100kΩ 5% 0.1W
3A49	3198 031 04730	47Ω 5% 0402
3A50	4822 117 13545	100Ω 1% 0402
3A51	3198 031 04730	47Ω 5% 0402
3A52	3198 031 03930	39kΩ 5% 0402
3A53	3198 031 03930	39kΩ 5% 0402
3A55	3198 031 04720	4.7kΩ 5% 0402
3A56	3198 031 04720	4.7kΩ 5% 0402
3A66	4822 117 11297	100kΩ 5% 0.1W
3A70	4822 117 13545	100Ω 1% 0402
3A71	4822 117 13545	100Ω 1% 0402
3A72	4822 117 13545	100Ω 1% 0402
3A73	4822 117 13602	2.2kΩ 5% 0.01W 0402
3A74	4822 051 30759	75Ω 5% 0.062W
3A75	4822 117 13602	2.2kΩ 5% 0.01W 0402
3A76	4822 051 30332	3.3kΩ 5% 0.062W
3A77	4822 051 30759	75Ω 5% 0.062W
3A78	4822 051 30101	100Ω 5% 0.062W
3A81	4822 117 13545	100Ω 1% 0402
3A82	4822 117 13545	100Ω 1% 0402
3A83	4822 117 13545	100Ω 1% 0402
3A84	4822 051 30689	68Ω 5% 0.063W 0603
3AA0	3198 031 04730	47Ω 5% 0402
3AA1	3198 031 04730	47Ω 5% 0402
3AA2	4822 051 30101	100Ω 5% 0.062W
3AA4	3198 031 04730	47Ω 5% 0402
3AA5	4822 117 11297	100kΩ 5% 0.1W
3AA6	3198 031 06820	6.8kΩ 5% 0.01W 0402
3AA7	3198 031 06830	68kΩ 5% 0.01W 0402
3AA9	3198 031 06820	6.8kΩ 5% 0.01W 0402
3AB0	3198 031 04730	47Ω 5% 0402
3AB2	3198 031 04730	47Ω 5% 0402
3AB3	4822 117 11297	100kΩ 5% 0.1W
3AB5	3198 031 06830	68kΩ 5% 0.01W 0402
3AB6	4822 117 11297	100kΩ 5% 0.1W
3AB7	3198 031 06820	6.8kΩ 5% 0.01W 0402
3AB8	3198 031 06830	68kΩ 5% 0.01W 0402
3AB9	3198 031 06820	6.8kΩ 5% 0.01W 0402
3AC8	4822 117 13545	100Ω 1% 0402
3C00	4822 051 30222	2.2kΩ 5% 0.062W
3C01	4822 051 30109	10Ω 5% 0.062W
3C03	4822 051 30103	10kΩ 5% 0.062W
3C04	4822 051 30103	10kΩ 5% 0.062W
3C05	4822 051 30471	470Ω 5% 0.062W
3C08	4822 051 30103	10kΩ 5% 0.062W
3C09	4822 051 30103	10kΩ 5% 0.062W
3I04	4822 117 13545	100Ω 1% 0402
3I05	4822 117 13545	100Ω 1% 0402
3I06	4822 117 11927	75Ω 1% 0.1W
3I08	3198 031 01090	10Ω 5% 0.01W 0402
3I09	3198 031 06830	68kΩ 5% 0.01W 0402
3I11	3198 031 05610	560Ω 5% 0.01W 0402
3I12	4822 117 13543	470Ω 5% 0402
3I13	3198 031 05610	560Ω 5% 0.01W 0402
3I14	4822 117 13543	470Ω 5% 0402
3I15	3198 031 05610	560Ω 5% 0.01W 0402
3I16	4822 117 13543	470Ω 5% 0402
3I17	3198 031 05610	560Ω 5% 0.01W 0402
3I18	4822 117 13543	470Ω 5% 0402
3I23	4822 117 11297	100kΩ 5% 0.1W
3I25	4822 117 13605	Jumper 0402
3I34	4822 117 13601	22kΩ 5% 0402
3I35	4822 051 30101	100Ω 5% 0.062W
3I36	4822 117 13601	22kΩ 5% 0402
3I37	4822 051 30101	100Ω 5% 0.062W
3I38	3198 031 08220	8.2kΩ 5% 0,5W
3I39	3198 031 02720	2.7kΩ 5% 0,01W 0402
3I40	4822 051 30759	75Ω 5% 0.062W
3I41	4822 117 13545	100Ω 1% 0402
3I42	4822 117 13601	22kΩ 5% 0402
3I43	4822 051 30101	100Ω 5% 0.062W
3I44	4822 117 13601	22kΩ 5% 0402
3I45	4822 051 30101	100Ω 5% 0.062W
3I46	3198 031 08220	8.2kΩ 5% 0,5W
3I47	3198 031 02720	2.7kΩ 5% 0,01W 0402
3I48	4822 051 30759	75Ω 5% 0.062W
3I49	4822 117 13545	100Ω 1% 0402
3I50	4822 051 30151	150Ω 5% 0.062W
3I51	4822 051 30101	100Ω 5% 0.062W
3I52	4822 051 30151	150Ω 5% 0.062W
3I53	4822 051 30101	100Ω 5% 0.062W
3I54	4822 117 13545	100Ω 1% 0402
3I55	4822 051 30759	75Ω 5% 0.062W
3I56	4822 117 13545	100Ω 1% 0402
3I57	4822 051 30759	75Ω 5% 0.062W
3I58	4822 117 13545	100Ω 1% 0402
3I59	4822 051 30759	75Ω 5% 0.062W
3I60	4822 051 30759	75Ω 5% 0.062W
3I61	4822 051 30101	100Ω 5% 0.062W
3I62	4822 051 30101	100Ω 5% 0.062W
3I63	3198 031 03920	3.9kΩ 5% 0402
3I64	3198 031 08220	8.2kΩ 5% 0,5W
3I65	4822 051 30101	100Ω 5% 0.062W
3I66	4822 051 30759	75Ω 5% 0.062W
3I67	4822 051 30759	75Ω 5% 0.062W
3I68	4822 117 13545	100Ω 1% 0402
3I69	4822 051 30151	150Ω 5% 0.062W
3I70	4822 051 30101	100Ω 5% 0.062W
3I71	4822 051 30151	150Ω 5% 0.062W
3I72	4822 051 30101	100Ω 5% 0.062W
3I73	4822 117 13605	Jumper 0402
3I75	4822 117 13545	100Ω 1% 0402
3I76	4822 117 13545	100Ω 1% 0402
3I77	4822 051 30759	75Ω 5% 0.062W
3I78	4822 051 30759	75Ω 5% 0.062W
3I79	4822 051 30101	100Ω 5% 0.062W
3I80	4822 051 30101	100Ω 5% 0.062W
3I81	3198 031 08220	8.2kΩ 5% 0,5W
3I82	3198 031 03920	3.9kΩ 5% 0402
3I83	4822 117 13545	100Ω 1% 0402
3I84	4822 051 30759	75Ω 5% 0.062W
3I85	4822 117 13545	100Ω 1% 0402
3I86	4822 051 30759	75Ω 5% 0.062W
3I87	4822 117 13545	100Ω 1% 0402
3I89	4822 051 30151	150Ω 5% 0.062W
3I90	4822 051 30101	100Ω 5% 0.062W
3I91	4822 051 30151	150Ω 5% 0.062W
3I92	4822 051 30101	100Ω 5% 0.062W
3I94	4822 051 30271	270Ω 5% 0.062W
3I95	4822 051 30101	100Ω 5% 0.062W
3I96	4822 051 30271	270Ω 5% 0.062W
3I97	4822 051 30101	100Ω 5% 0.062W
3I98	4822 117 11297	100kΩ 5% 0.1W
3I99	4822 051 30271	270Ω 5% 0.062W
3IA0	4822 117 13545	100Ω 1% 0402
3IA1	4822 117 11297	100kΩ 5% 0.1W
3IA2	4822 051 30101	100Ω 5% 0.062W
3IA3	4822 117 13601	22kΩ 5% 0402
3IA4	4822 117 13548	1kΩ 5% 0402
3IA5	4822 117 13548	1kΩ 5% 0402
3IA6	4822 051 30102	1kΩ 5% 0.062W
3IA7	4822 051 30102	1kΩ 5% 0.062W
3IA8	4822 051 30102	1kΩ 5% 0.062W
3IA9	4822 051 30102	1kΩ 5% 0.062W
3IB0	4822 051 30102	1kΩ 5% 0.062W
3IB1	4822 117 12925	47kΩ 1% 0.063W 0603
3IB2	4822 051 30101	100Ω 5% 0.062W
3IB4	4822 051 30223	22kΩ 5% 0.062W
3IB5	4822 051 30103	10kΩ 5% 0.062W
3IB7	4822 051 30151	150Ω 5% 0.062W
3IB9	4822 117 12925	47kΩ 1% 0.063W 0603
3IC0	4822 051 30151	150Ω 5% 0.062W
3IC1	4822 117 13574	1.5Ω 5% 1206
3IC2	4822 117 13601	22kΩ 5% 0402
3IC3	4822 117 13601	22kΩ 5% 0402
3IC4	4822 051 30101	100Ω 5% 0.062W
3IC6	4822 051 30101	100Ω 5% 0.062W
3IC7	4822 051 30151	150Ω 5% 0.062W
3ID0	3198 031 04720	4.7kΩ 5% 0402
3ID3	4822 051 30101	100Ω 5% 0.062W
3IH5	4822 117 13601	22kΩ 5% 0402
3IH6	4822 117 13601	22kΩ 5% 0402
3IH7	4822 117 13606	10kΩ 5% 0.01W 0402
3IH8	3198 031 04730	47Ω 5% 0402
3IH9	3198 031 04730	47Ω 5% 0402
3II0	4822 117 13606	10kΩ 5% 0.01W 0402
3II1	4822 117 13601	22kΩ 5% 0402
3II2	4822 117 13601	22kΩ 5% 0402
3II3	3198 031 04730	47Ω 5% 0402
3II4	3198 031 04730	47Ω 5% 0402
3IJ0	4822 117 13545	100Ω 1% 0402
3IJ1	4822 117 13545	100Ω 1% 0402
3IJ3	4822 117 13601	22kΩ 5% 0402
3IJ4	4822 117 13601	22kΩ 5% 0402
3IK0	4822 051 30008	Jumper 0603
3IK2	4822 117 13601	22kΩ 5% 0402
3IK3	4822 117 13601	22kΩ 5% 0402
3IK4	4822 117 11927	75Ω 1% 0.1W
3IK5	4822 117 11927	75Ω 1% 0.1W
3IK7	4822 117 11152	4.7Ω 5% 0.062W
3IK9	4822 051 30759	75Ω 5% 0.062W
3IN2	4822 051 30759	75Ω 5% 0.062W
3IN3	4822 051 30759	75Ω 5% 0.062W
3IN4▲	2322 750 63908	3.9Ω 5% Fuse 1206
3IN5	4822 117 13601	22kΩ 5% 0402
3IN6	4822 117 13601	22kΩ 5% 0402
3IO5	4822 117 13606	10kΩ 5% 0.01W 0402
3IO6	4822 117 13606	10kΩ 5% 0.01W 0402
3IP0	4822 117 12902	8.2kΩ 1% 0.063W 0603
3IP1	4822 117 11817	1.2kΩ 1% 1/16W
3IP2	4822 051 30221	220Ω 5% 0.062W
3IP3	4822 051 30759	75Ω 5% 0.062W
3IP4	4822 051 30221	220Ω 5% 0.062W
3IP5	4822 117 11748	2.2Ω 1206 5%
3IP6	4822 051 30102	1kΩ 5% 0.062W
3IP7	4822 051 30272	2.7kΩ 5% 0.062W
3IQ0	4822 051 30109	10Ω 5% 0.062W
3IQ1	4822 051 30561	560Ω 5% 0.062W
3IR0	4822 051 30223	22kΩ 5% 0.062W
3IR1	4822 051 30223	22kΩ 5% 0.062W
3IR2	3198 031 04730	47Ω 5% 0402
3IR3	3198 031 04730	47Ω 5% 0402
3IR4	4822 117 13605	Jumper 0402
3IR6	3198 031 07590	75Ω 5% 0402
3IR7	3198 031 07590	75Ω 5% 0402
3IR8	4822 117 13596	220Ω 5% 0.01W 0402
3IS2	4822 051 30101	100Ω 5% 0.062W
3IS3	4822 051 30101	100Ω 5% 0.062W
3IS4	4822 051 30101	100Ω 5% 0.062W
3IS5	4822 051 30101	100Ω 5% 0.062W
3IS6	4822 051 30101	100Ω 5% 0.062W
3IS8	4822 051 30223	22kΩ 5% 0.062W
3IS9	4822 051 30223	22kΩ 5% 0.062W
3IT0	4822 117 12925	47kΩ 1% 0.063W 0603
3IT1	4822 117 12925	47kΩ 1% 0.063W 0603
3IT2	4822 117 12925	47kΩ 1% 0.063W 0603
3IT3	4822 117 12925	47kΩ 1% 0.063W 0603
3IT4	4822 117 12925	47kΩ 1% 0.063W 0603
3IT7	4822 117 13545	100Ω 1% 0402
3P00▲	2322 750 63908	3.9Ω 5% Fuse 1206
3P01	4822 117 11748	2.2Ω 1206 5%
3P02	4822 117 11151	1Ω 5%
3P03	4822 051 30222	2.2kΩ 5% 0.062W
3P04	4822 051 30472	4.7kΩ 5% 0.062W
3P05	4822 051 30562	5.6kΩ 5% 0.063W 0603
3P06	4822 051 30101	100Ω 5% 0.062W
3P07	4822 051 30272	2.7kΩ 5% 0.062W
3P08	4822 051 30472	4.7kΩ 5% 0.062W
3P11	4822 051 30479	47Ω 5% 0.062W
3P16	4822 051 30472	4.7kΩ 5% 0.062W
3P18	4822 051 30479	47Ω 5% 0.062W
3P22	4822 051 30101	100Ω 5% 0.062W
3P23	4822 051 30101	100Ω 5% 0.062W
3P24	4822 051 30153	15kΩ 5% 0.062W
3P25	4822 051 30391	390Ω 5% 0.062W
3P26	4822 051 30471	470Ω 5% 0.062W
3P27	4822 051 30181	180Ω 5% 0.062W
3P28	4822 051 30391	390Ω 5% 0.062W
3P29	4822 117 13632	100kΩ 1% 0603 0.62W
3P30	4822 051 30101	100Ω 5% 0.062W
3P31	4822 051 30471	470Ω 5% 0.062W
3P32	4822 051 30561	560Ω 5% 0.062W
3P34	4822 051 30479	47Ω 5% 0.062W
3P35	4822 051 30471	470Ω 5% 0.062W

3P36	4822 051 30102	1kΩ 5% 0.062W
3P40	4822 051 30121	120Ω 5% 0.062W
3P44	4822 051 30101	100Ω 5% 0.062W
3P48	4822 117 13545	100Ω 1% 0402
3P58	4822 117 13545	100Ω 1% 0402
3P59	4822 117 13545	100Ω 1% 0402
3P61	4822 051 30273	27kΩ 5% 0.062W
3P62	4822 117 13545	100Ω 1% 0402
3P63	4822 117 13545	100Ω 1% 0402
3P64	4822 117 13545	100Ω 1% 0402
3P65	4822 117 13545	100Ω 1% 0402
3P66	4822 117 13545	100Ω 1% 0402
3P67	3198 031 04720	4.7kΩ 5% 0402
3P68	3198 031 04720	4.7kΩ 5% 0402
3P69	3198 031 04720	4.7kΩ 5% 0402
3P70	3198 031 04720	4.7kΩ 5% 0402
3P72	3198 031 04720	4.7kΩ 5% 0402
3P74	4822 117 11748	2.2Ω 1206 5%
3P75	4822 117 13545	100Ω 1% 0402
3P85	3198 031 04720	4.7kΩ 5% 0402
3P86	4822 117 13606	10kΩ 5% 0.01W 0402
3P87	4822 117 13606	10kΩ 5% 0.01W 0402
3P88⚠	2322 750 63908	3.9Ω 5% Fuse 1206
3P90	4822 051 30561	560Ω 5% 0.062W
3P91	4822 051 30561	560Ω 5% 0.062W
3P92	4822 051 30561	560Ω 5% 0.062W
3PA0	4822 117 13596	220Ω 5% 0.01W 0402
3PA1	4822 117 13545	100Ω 1% 0402
3PA3	4822 117 13545	100Ω 1% 0402
3PA7	4822 117 13545	100Ω 1% 0402
3PA8	4822 117 13596	220Ω 5% 0.01W 0402
3PA9	4822 051 30393	39kΩ 5% 0.062W
3PB2	3198 031 01520	1.2kΩ 5% 0.01W 0402
3PB4	3198 031 01520	1.2kΩ 5% 0.01W 0402
3PB6	4822 117 11817	1.2kΩ 1% 1/16W
3PB7	4822 117 13545	100Ω 1% 0402
3PB8	4822 117 12903	1.8kΩ 1% 0.063W 0603
3PB9	3198 031 03320	3.3kΩ 5% 0402
3PC0	3198 031 03320	3.3kΩ 5% 0402
3PC1	4822 117 13545	100Ω 1% 0402
3PC2	4822 117 13545	100Ω 1% 0402
3PC4	3198 031 06810	680Ω 5% 0.01W 0402
3PC5	4822 051 30472	4.7kΩ 5% 0.062W
3PC6	4822 051 30393	39kΩ 5% 0.062W
3PC7	4822 117 13596	220Ω 5% 0.01W 0402
3PC8	4822 117 13545	100Ω 1% 0402
3PD0	4822 117 13596	220Ω 5% 0.01W 0402
3PD2	4822 117 13545	100Ω 1% 0402
3PD3	4822 117 12903	1.8kΩ 1% 0.063W 0603
3PD5	3198 031 03320	3.3kΩ 5% 0402
3PD7	4822 117 11817	1.2kΩ 1% 1/16W
3PD8	3198 031 03320	3.3kΩ 5% 0402
3PD9	3198 031 03320	3.3kΩ 5% 0402
3PE0	3198 031 01520	1.2kΩ 5% 0.01W 0402
3PE2	3198 031 01520	1.2kΩ 5% 0.01W 0402
3PE9	4822 117 13597	330Ω 5% 0402 0.01W
3PF0	3198 031 01210	120Ω 5% 0.01W 0402
3PF1	3198 031 01520	1.2kΩ 5% 0.01W 0402
3PF2	4822 051 30271	270Ω 5% 0.062W
3PF3	3198 031 03320	3.3kΩ 5% 0402
3PF4	4822 117 13601	22kΩ 5% 0402
3PF5	4822 051 30102	1kΩ 5% 0.062W
3PF6	3198 031 05610	560Ω 5% 0.01W 0402
3PF7	4822 117 13545	100Ω 1% 0402
3PF8	3198 031 08210	820Ω 5% 0,5W
3PF9	4822 051 30121	120Ω 5% 0.062W
3PG0	3198 031 05610	560Ω 5% 0.01W 0402
3PG1	4822 051 30689	68Ω 5% 0.063W 0603
3PG2	3198 031 06810	680Ω 5% 0.01W 0402
3PG3	3198 031 06810	680Ω 5% 0.01W 0402
3PG4	3198 031 06810	680Ω 5% 0.01W 0402
3PG5	3198 031 06810	680Ω 5% 0.01W 0402
3PG6	3198 031 06810	680Ω 5% 0.01W 0402
3PH1	4822 117 13546	47Ω 0402 5%
3PH2	4822 117 13546	47Ω 0402 5%
3PH3	4822 117 13546	47Ω 0402 5%
3PH4	4822 117 13546	47Ω 0402 5%
3PH5	4822 117 13546	47Ω 0402 5%
3PH6	4822 117 13546	47Ω 0402 5%
3PH7	4822 117 13546	47Ω 0402 5%
3PH8	4822 117 13546	47Ω 0402 5%
3PH9	4822 117 13546	47Ω 0402 5%
3S01	2422 549 43062	Bead 600Ω at 100MHz
3S02	2422 549 43062	Bead 600Ω at 100MHz
3S03	2422 549 43062	Bead 600Ω at 100MHz
3S04	2422 549 43062	Bead 600Ω at 100MHz
3S05	2422 549 43062	Bead 600Ω at 100MHz
3S06	2422 549 43062	Bead 600Ω at 100MHz
3S07	2422 549 43062	Bead 600Ω at 100MHz
3S08	2422 549 43062	Bead 600Ω at 100MHz
3S09	2422 549 43062	Bead 600Ω at 100MHz
3S10	2422 549 43062	Bead 600Ω at 100MHz
3U01	4822 051 30102	1kΩ 5% 0.062W
3U02	4822 051 30102	1kΩ 5% 0.062W
3U03	4822 051 30333	33kΩ 5% 0.062W
3U04	4822 051 20121	120Ω 5% 0,1W
3U05	4822 051 30102	1kΩ 5% 0.062W
3U06	4822 051 30471	470Ω 5% 0.062W
3U07	4822 117 12139	22Ω 5% 0.062W
3U08	5322 117 13034	1.5kΩ 1% 0.063W 0603
3U09	4822 051 30562	5.6kΩ 5% 0.063W 0603
3U10	4822 051 30109	10Ω 5% 0.062W
3U11	4822 051 30121	120Ω 5% 0.062W
3U12	4822 117 12925	47kΩ 1% 0.063W 0603
3U13	4822 051 30103	10kΩ 5% 0.062W
3U14	4822 051 30102	1kΩ 5% 0.062W
3U15	5322 117 13042	3.9kΩ 1% 0.063W 0603
3U16	4822 051 30479	47Ω 5% 0.062W
3U17	4822 117 13608	4.7Ω 5% 0603 0.62W
3U18	5322 117 13018	1kΩ 1% 0.063W 0603
3U19	4822 051 30472	4.7kΩ 5% 0.062W
3U20	5322 117 13018	1kΩ 1% 0.063W 0603
3U21	4822 117 12925	47kΩ 1% 0.063W 0603
3U22	4822 051 30271	270Ω 5% 0.062W
3U23	4822 051 30121	120Ω 5% 0.062W
3U24	4822 051 30223	22kΩ 5% 0.062W
3U25	4822 117 12891	220kΩ 1% 0.063W 0603
3U26	4822 051 30223	22kΩ 5% 0.062W
3U27	4822 051 30103	10kΩ 5% 0.062W
3U28	4822 117 12925	47kΩ 1% 0.063W 0603
3U29	4822 051 30109	10Ω 5% 0.062W
3U30	4822 051 20121	120Ω 5% 0,1W
3U31	4822 051 20121	120Ω 5% 0,1W
3U32	4822 051 30183	18kΩ 5% 0.062W
3U33	4822 051 30103	10kΩ 5% 0.062W
3U34	4822 051 30334	330kΩ 5% 0.062W
3U35	4822 051 30103	10kΩ 5% 0.062W
3U36	4822 051 30222	2.2kΩ 5% 0.062W
3U37	4822 051 30223	22kΩ 5% 0.062W
3U38	4822 051 30222	2.2kΩ 5% 0.062W
3U39	4822 051 30223	22kΩ 5% 0.062W
3U40	4822 117 12891	220kΩ 1% 0.063W 0603
3U41	4822 051 30102	1kΩ 5% 0.062W
3U42	4822 051 30103	10kΩ 5% 0.062W
3U43	4822 051 30223	22kΩ 5% 0.062W
3U44	4822 051 30105	1MΩ 5% 0.062W
3U45	4822 051 30105	1MΩ 5% 0.062W
3U46	5322 117 13029	47kΩ 1% 0.063W 0603
3U47	4822 051 30223	22kΩ 5% 0.062W
3U48	4822 051 30103	10kΩ 5% 0.062W
3U49	4822 051 30223	22kΩ 5% 0.062W
3U50	4822 051 30103	10kΩ 5% 0.062W
3U51	4822 051 30339	33Ω 5% 0.062W
9016	4822 051 30008	Jumper 0603
9302	4822 051 30008	Jumper 0603
9303	4822 051 30008	Jumper 0603
9304	4822 051 30008	Jumper 0603
9318	4822 051 30008	Jumper 0603
9322	4822 051 30008	Jumper 0603
9406	4822 051 30008	Jumper 0603
9410	4822 051 30008	Jumper 0603
9413	4822 051 30008	Jumper 0603
9416	4822 051 30008	Jumper 0603
9417	4822 051 30008	Jumper 0603
9418	4822 051 30008	Jumper 0603
9419	4822 051 30008	Jumper 0603
9420	4822 051 30008	Jumper 0603
9702	4822 051 30008	Jumper 0603
9704	4822 051 30008	Jumper 0603
9712	4822 051 30008	Jumper 0603
9714	4822 051 30008	Jumper 0603
9716	4822 051 30008	Jumper 0603
9717	4822 051 30008	Jumper 0603
9721	4822 051 30008	Jumper 0603
9723	4822 051 30008	Jumper 0603
9725	4822 051 30008	Jumper 0603
9727	4822 051 30008	Jumper 0603
9728	4822 051 30008	Jumper 0603
9729	4822 051 30008	Jumper 0603
9731	4822 051 30008	Jumper 0603
9733	4822 051 30008	Jumper 0603
9735	4822 051 30008	Jumper 0603
9740	4822 051 30008	Jumper 0603
9741	4822 117 12662	4 x 10Ω 5%
9744	4822 051 30008	Jumper 0603
9747	4822 051 30008	Jumper 0603
9754	4822 051 30008	Jumper 0603
9760	4822 051 30008	Jumper 0603
9761	4822 051 30008	Jumper 0603
9762	4822 051 30008	Jumper 0603
9763	4822 051 30008	Jumper 0603
9764	4822 051 30008	Jumper 0603
9765	4822 051 30008	Jumper 0603
9767	4822 051 30008	Jumper 0603
9768	4822 051 30008	Jumper 0603
9769	4822 051 30008	Jumper 0603
9A02	4822 117 13605	Jumper 0402
9A03	4822 117 13605	Jumper 0402
9A09	4822 051 20008	Jumper 0805
9I08	4822 117 13605	Jumper 0402
9I13	4822 051 30008	Jumper 0603
9I16	4822 051 30008	Jumper 0603
9I32	4822 117 13605	Jumper 0402
9I33	4822 117 13605	Jumper 0402
9I34	4822 117 13605	Jumper 0402
9I35	4822 117 13605	Jumper 0402
9I36	4822 117 13605	Jumper 0402
9I37	4822 117 13605	Jumper 0402
9I48	4822 117 13605	Jumper 0402
9I49	4822 117 13605	Jumper 0402
9I80	4822 117 13605	Jumper 0402
9I84	4822 117 13605	Jumper 0402
9I85	4822 117 13605	Jumper 0402
9I86	4822 117 13605	Jumper 0402
9I88	4822 117 13605	Jumper 0402
9I93	4822 117 13605	Jumper 0402
9IA2	4822 117 13605	Jumper 0402
9P02	4822 051 30008	Jumper 0603
9P03	4822 051 30008	Jumper 0603
9P05	4822 051 30008	Jumper 0603
9P09	4822 051 30008	Jumper 0603
9P12	4822 051 30008	Jumper 0603
9P13	4822 051 30008	Jumper 0603
9P15	4822 051 30008	Jumper 0603
9P17	4822 051 30008	Jumper 0603
9P24	4822 117 13605	Jumper 0402
9P28	4822 051 30008	Jumper 0603
9P29	4822 051 30008	Jumper 0603
9P52	4822 117 13605	Jumper 0402
9P53	4822 117 13605	Jumper 0402
9P54	4822 117 13605	Jumper 0402
9P55	4822 117 13605	Jumper 0402
9P57	4822 117 13605	Jumper 0402
9P60	4822 117 13605	Jumper 0402
9P63	4822 117 13605	Jumper 0402
9P64	4822 117 13605	Jumper 0402
9P69	4822 117 13605	Jumper 0402
9P70	4822 117 13605	Jumper 0402
9P71	4822 117 13605	Jumper 0402
9PA2	4822 117 13605	Jumper 0402
9PA7	4822 117 13605	Jumper 0402
9PB1	4822 117 13605	Jumper 0402
9PB2	4822 051 20008	Jumper 0805
9PB4	4822 051 30008	Jumper 0603
9PB5	4822 051 30008	Jumper 0603
9S01	4822 051 30008	Jumper 0603
9S02	4822 051 30008	Jumper 0603
9S03	4822 051 30008	Jumper 0603
9S04	4822 051 30008	Jumper 0603
9S05	4822 051 30008	Jumper 0603
9S06	4822 051 30008	Jumper 0603
9S07	4822 051 30008	Jumper 0603
9S08	4822 051 30008	Jumper 0603
9S09	4822 051 30008	Jumper 0603
9S11	4822 051 30008	Jumper 0603
9S12	4822 051 30008	Jumper 0603
9S13	4822 051 30008	Jumper 0603
9S14	4822 051 30008	Jumper 0603
9S15	4822 051 30008	Jumper 0603
9S16	4822 051 30008	Jumper 0603
9S17	4822 051 30008	Jumper 0603
9S18	4822 051 30008	Jumper 0603
9S19	4822 051 30008	Jumper 0603
9S20	4822 051 30008	Jumper 0603
9S21	4822 051 30008	Jumper 0603
9S22	4822 051 30008	Jumper 0603
9S23	4822 051 30008	Jumper 0603
9S24	4822 051 30008	Jumper 0603
9S25	4822 051 30008	Jumper 0603
9S26	4822 051 30008	Jumper 0603
9S27	4822 051 30008	Jumper 0603
9S28	4822 051 30008	Jumper 0603
9S29	4822 051 30008	Jumper 0603
9S65	4822 051 30008	Jumper 0603
9T01	4822 051 30223	22kΩ 5% 0.062W
9T02	4822 051 30223	22kΩ 5% 0.062W
9T04	4822 051 30008	Jumper 0603
9T06	4822 051 30008	Jumper 0603
9T07	4822 051 30008	Jumper 0603
9T08	4822 051 30008	Jumper 0603
9T09	4822 051 30008	Jumper 0603
9T10	4822 051 30008	Jumper 0603
9T11	4822 051 30008	Jumper 0603
9T12	4822 051 30008	Jumper 0603
9T13	4822 051 20008	Jumper 0805
9T14	4822 051 20008	Jumper 0805
9T15	4822 051 30008	Jumper 0603
9T16	4822 051 30008	Jumper 0603
9U01	4822 051 30008	Jumper 0603
9U03	4822 051 30008	Jumper 0603
9U08	4822 051 30008	Jumper 0603

5301	4822 157 11876	6.8µH 10% 0805
5302	4822 157 11876	6.8µH 10% 0805
5313	4822 051 20008	Jumper 0805
5314	4822 051 20008	Jumper 0805
5315	4822 051 20008	Jumper 0805
5401	3198 018 56880	6.8µH 10% 0603
5403	2422 549 44461	Coil trim. 40.4MHz 5CCE
5404	2422 535 95427	Bead 120Ω at 100MHz
5405	2422 535 95427	Bead 120Ω at 100MHz
5406	3198 018 52280	2.2µH 10% 0603
5408	2422 549 44983	Coil trim. 78MHz 5CCB
5411	3198 018 32770	0.27µH 10% 0805
5415	4822 157 11716	Bead 30Ω at 100MHz
5416	4822 157 11716	Bead 30Ω at 100MHz
5700	4822 157 71304	1µH 10% 0805
5701	4822 157 71304	1µH 10% 0805
5702	4822 157 71304	1µH 10% 0805
5705	4822 156 21729	Bead 1kΩ at 100MHz
5706	4822 157 11716	Bead 30Ω at 100MHz
5710	4822 157 11716	Bead 30Ω at 100MHz
5711	4822 157 11716	Bead 30Ω at 100MHz
5712	4822 156 21729	Bead 1kΩ at 100MHz
5713	4822 157 11716	Bead 30Ω at 100MHz
5714	4822 157 71206	Bead 600Ω at 100MHz
5716	4822 156 21729	Bead 1kΩ at 100MHz
5717	4822 156 21729	Bead 1kΩ at 100MHz
5718	4822 157 11716	Bead 30Ω at 100MHz
5719	4822 156 21729	Bead 1kΩ at 100MHz
5722	4822 157 11716	Bead 30Ω at 100MHz
5723	4822 157 11716	Bead 30Ω at 100MHz
5724	4822 156 21729	Bead 1kΩ at 100MHz
5725	4822 157 11716	Bead 30Ω at 100MHz
5726	4822 156 21729	Bead 1kΩ at 100MHz
5727	4822 156 21729	Bead 1kΩ at 100MHz
5728	4822 157 11716	Bead 30Ω at 100MHz
5729	4822 157 11716	Bead 30Ω at 100MHz
5731	4822 156 21729	Bead 1kΩ at 100MHz
5736	4822 157 11876	6.8µH 10% 0805
5737	4822 156 21729	Bead 1kΩ at 100MHz
5739	4822 157 10586	2.2µH 10% 0805
5740	4822 157 10586	2.2µH 10% 0805
5741	4822 157 10586	2.2µH 10% 0805
5742	4822 157 11716	Bead 30Ω at 100MHz
5743	4822 157 11716	Bead 30Ω at 100MHz
5744	4822 157 11716	Bead 30Ω at 100MHz
5745	4822 157 11716	Bead 30Ω at 100MHz
5746	4822 157 11716	Bead 30Ω at 100MHz
5747	4822 157 11716	Bead 30Ω at 100MHz
5749	4822 157 11716	Bead 30Ω at 100MHz
5750	4822 157 11716	Bead 30Ω at 100MHz
5751	4822 157 11716	Bead 30Ω at 100MHz
5752	4822 157 11716	Bead 30Ω at 100MHz
5753	4822 157 11716	Bead 30Ω at 100MHz
5754	4822 157 11716	Bead 30Ω at 100MHz
5755	4822 157 11716	Bead 30Ω at 100MHz
5756	4822 157 11716	Bead 30Ω at 100MHz
5757	4822 157 11716	Bead 30Ω at 100MHz
5A00	4822 157 11716	Bead 30Ω at 100MHz
5A01	4822 157 11716	Bead 30Ω at 100MHz
5A03	4822 157 11716	Bead 30Ω at 100MHz
5A04	2422 549 43769	Bead 30Ω at 100MHz
5A05	2422 549 43769	Bead 30Ω at 100MHz
5A06	4822 157 11716	Bead 30Ω at 100MHz
5A10	2422 549 43769	Bead 30Ω at 100MHz
5A11	2422 549 43769	Bead 30Ω at 100MHz
5A12	2422 549 43769	Bead 30Ω at 100MHz
5A13	2422 549 43769	Bead 30Ω at 100MHz
5A14	2422 549 43769	Bead 30Ω at 100MHz
5A15	2422 549 43769	Bead 30Ω at 100MHz
5A16	2422 549 43769	Bead 30Ω at 100MHz
5A17	2422 549 43769	Bead 30Ω at 100MHz
5A18	2422 549 43769	Bead 30Ω at 100MHz
5A19	4822 157 11828	22µH 20% 0805
5A20	4822 157 11716	Bead 30Ω at 100MHz
5A21	4822 157 11716	Bead 30Ω at 100MHz
5A23	2422 549 43769	Bead 30Ω at 100MHz
5A24	2422 549 43769	Bead 30Ω at 100MHz
5A31	2422 549 43769	Bead 30Ω at 100MHz
5A32	2422 549 43769	Bead 30Ω at 100MHz
5A33	2422 549 43769	Bead 30Ω at 100MHz
5A38	4822 157 11716	Bead 30Ω at 100MHz
5A60	2422 549 43769	Bead 30Ω at 100MHz
5A61	2422 549 43769	Bead 30Ω at 100MHz
5A62	2422 549 43769	Bead 30Ω at 100MHz
5A63	2422 549 43769	Bead 30Ω at 100MHz
5A64	2422 549 43769	Bead 30Ω at 100MHz
5A65	2422 549 43769	Bead 30Ω at 100MHz
5A66	2422 549 43769	Bead 30Ω at 100MHz
5A67	2422 549 43769	Bead 30Ω at 100MHz
5P00	4822 157 11716	Bead 30Ω at 100MHz
5P01	4822 157 11716	Bead 30Ω at 100MHz
5P02	3198 018 33370	0.33µH 10% 0805
5P03	4822 157 11876	6.8µH 10% 0805
5P04	3198 018 56880	6.8µH 10% 0603
5P06	4822 157 10586	2.2µH 10% 0805
5P07	2422 549 44461	Coil trim. 40.4MHz 5CCE
5P08	2422 549 44983	Coil trim. 78MHz 5CCB
5P09	4822 157 11716	Bead 30Ω at 100MHz
5P10	4822 157 11716	Bead 30Ω at 100MHz
5P51	4822 157 11716	Bead 30Ω at 100MHz
5PA0	4822 157 71694	0.82µH 10%
5PA1	3198 018 31290	12µH 10%
5PA2	4822 157 10977	4.7µH 10%
5PA3	4822 157 10977	4.7µH 10%
5PA4	4822 157 71694	0.82µH 10%
5PA5	3198 018 31290	12µH 10%
5PA6	3198 018 31290	12µH 10%
5PA7	3198 018 31290	12µH 10%
5PA8	3198 018 31290	12µH 10%
5PA9	4822 157 11716	Bead 30Ω at 100MHz
5PB0	4822 157 11716	Bead 30Ω at 100MHz
5S01	4822 157 11716	Bead 30Ω at 100MHz
5S02	4822 157 11716	Bead 30Ω at 100MHz
5S03	4822 157 11716	Bead 30Ω at 100MHz
5S04	4822 157 11716	Bead 30Ω at 100MHz
5S05	4822 157 11716	Bead 30Ω at 100MHz
5T02	2422 535 94134	10µH 20% 0805
5T03	2422 535 94134	10µH 20% 0805
5U01⚠	3104 308 20661	Transformer BD13118-02 Y
5U02	2422 535 94134	10µH 20% 0805
5U03	4822 157 11716	Bead 30Ω at 100MHz
5U04	4822 157 11716	Bead 30Ω at 100MHz
5U05	2422 535 94134	10µH 20% 0805
5U06	2422 535 94134	10µH 20% 0805

6001	4822 130 80622	BAT54
6002	4822 130 11397	BAS316
6003	4822 130 80622	BAT54
6004	4822 130 80622	BAT54
6005	4822 130 11422	PLVA2650A
6303	4822 130 11594	BZX284-C47
6304	4822 130 11397	BAS316
6306	3198 020 55680	BZX384-C5V6
6307	4822 130 11528	1PS76SB10
6309	4822 130 11397	BAS316
6310	4822 130 11416	PDZ6.8B
6311	9340 548 67115	PDZ22B
6312	4822 130 11397	BAS316
6313	9340 548 67115	PDZ22B
6314	4822 130 11397	BAS316
6317	4822 130 11397	BAS316
6319	4822 130 11397	BAS316
6334	4822 130 11397	BAS316
6403	9340 552 30115	BA591
6830	4822 130 11397	BAS316
6831	4822 130 11397	BAS316
6832	4822 130 11397	BAS316
6833	4822 130 11397	BAS316
6834	4822 130 11397	BAS316
6836	4822 130 11397	BAS316
6837	4822 130 11397	BAS316
6838	4822 130 11397	BAS316
6839	4822 130 11397	BAS316
6840	4822 130 11397	BAS316
6841	4822 130 11397	BAS316
6842	4822 130 11397	BAS316
6843	4822 130 11397	BAS316
6844	4822 130 11397	BAS316
6845	4822 130 11397	BAS316
6A00	4822 130 11551	UDZS10B
6A01	4822 130 10838	UDZ3.3B
6A02	4822 130 11397	BAS316
6I10	4822 130 11416	PDZ6.8B
6I11	4822 130 11416	PDZ6.8B
6I12	4822 130 11416	PDZ6.8B
6I13	4822 130 11416	PDZ6.8B
6I14	9340 548 61115	PDZ12B
6I15	4822 130 11416	PDZ6.8B
6I16	4822 130 11416	PDZ6.8B
6I17	4822 130 11416	PDZ6.8B
6I18	4822 130 11416	PDZ6.8B
6I19	4822 130 11416	PDZ6.8B
6I20	9340 548 61115	PDZ12B
6I21	4822 130 11416	PDZ6.8B
6I22	4822 130 11416	PDZ6.8B
6I23	4822 130 11416	PDZ6.8B
6I24	4822 130 11416	PDZ6.8B
6I25	4822 130 11416	PDZ6.8B
6I26	4822 130 11416	PDZ6.8B
6I27	4822 130 11416	PDZ6.8B
6I28	4822 130 11416	PDZ6.8B
6I29	4822 130 11416	PDZ6.8B
6I30	4822 130 11416	PDZ6.8B
6I31	4822 130 11416	PDZ6.8B
6I32	4822 130 11416	PDZ6.8B
6I33	4822 130 11416	PDZ6.8B
6I34	4822 130 11416	PDZ6.8B
6I35	4822 130 11416	PDZ6.8B
6I36	4822 130 11416	PDZ6.8B
6I37	4822 130 11416	PDZ6.8B
6I38	4822 130 11416	PDZ6.8B
6I39	4822 130 11416	PDZ6.8B
6I40	4822 130 11416	PDZ6.8B
6I41	4822 130 11416	PDZ6.8B
6I42	4822 130 11416	PDZ6.8B
6I43	4822 130 11416	PDZ6.8B
6I44	4822 130 11416	PDZ6.8B
6I45	4822 130 11416	PDZ6.8B
6I46	4822 130 11416	PDZ6.8B
6I47	4822 130 11416	PDZ6.8B
6I48	4822 130 11416	PDZ6.8B
6I49	9340 548 61115	PDZ12B
6I50	4822 130 11416	PDZ6.8B
6I51	4822 130 11416	PDZ6.8B
6I52	4822 130 11416	PDZ6.8B
6I53	4822 130 11416	PDZ6.8B
6I54	4822 130 11416	PDZ6.8B
6I55	4822 130 11416	PDZ6.8B
6I56	4822 130 11416	PDZ6.8B
6I57	4822 130 11416	PDZ6.8B
6I58	4822 130 11416	PDZ6.8B
6I59	4822 130 11416	PDZ6.8B
6I60	4822 130 11416	PDZ6.8B
6I61	4822 130 11416	PDZ6.8B
6I62	4822 130 11416	PDZ6.8B
6I63	4822 130 11416	PDZ6.8B
6I64	4822 130 11416	PDZ6.8B
6I65	4822 130 11416	PDZ6.8B
6I66	4822 130 11416	PDZ6.8B
6I67	4822 130 11416	PDZ6.8B
6I68	4822 130 11416	PDZ6.8B
6I69	4822 130 11416	PDZ6.8B
6I70	4822 130 11416	PDZ6.8B
6I73	4822 130 11416	PDZ6.8B
6I74	4822 130 11416	PDZ6.8B
6I76	4822 130 11416	PDZ6.8B
6I77	4822 130 11416	PDZ6.8B
6IA0	9340 548 61115	PDZ12B
6IA6	4822 130 11397	BAS316
6IA7	4822 130 11397	BAS316
6P03	9340 552 30115	BA591
6PA1	4822 130 11397	BAS316
6PB1	4822 130 11397	BAS316
6PB2	4822 130 11397	BAS316
6PB3	4822 130 11397	BAS316
6PB4	4822 130 11397	BAS316
6PB5	4822 130 11397	BAS316
6PB6	4822 130 11397	BAS316
6PB7	4822 130 11397	BAS316
6PB8	4822 130 11397	BAS316
6PB9	4822 130 11397	BAS316
6T01	4822 130 11397	BAS316
6T02	4822 130 11397	BAS316
6T03	4822 130 11397	BAS316
6T04	4822 130 11397	BAS316
6T08	4822 130 11027	BZX284-C33
6U01	4822 130 11397	BAS316
6U03	4822 130 11397	BAS316
6U04	4822 130 11397	BAS316
6U05	9340 548 61115	PDZ12B
6U06	9322 184 73668	1SMA5915B
6U07	4822 130 11416	PDZ6.8B
6U08	4822 130 80622	BAT54
6U09	4822 130 80622	BAT54
6U10	4822 130 11522	UDZ15B
6U11	4822 130 11397	BAS316

7001	9352 684 81557	SAA5801H/015
7002	3198 010 42320	BC857BW
7003	3198 010 42310	BC847BW
7004	3198 010 42310	BC847BW
7005	9322 172 45668	LF33ABDT
7007	9322 157 20668	MSM51V18165F-60J
7008	3198 010 42310	BC847BW
7009	3198 010 42310	BC847BW
7010	3198 010 42320	BC857BW
7011	9322 156 81668	M24C32-WMN6TNKSA
7012	9322 156 72668	M29W400BT-90N1
7013	3198 010 42310	BC847BW
7014	3198 010 42320	BC857BW
7015	4822 209 73852	PMBT2369
7016	4822 209 73852	PMBT2369

7017	4822 130 10255	MUN2213
7018	9352 115 40118	74LVC245APW
7019	9352 115 40118	74LVC245APW
7301	9352 681 65518	TDA9330N3
7303	3198 010 42320	BC857BW
7304	9340 310 30215	PDTC144ET
7307	9352 630 99118	TDA9181T
7309	3198 010 42310	BC847BW
7310	9340 425 20115	BC847BS
7312	9340 310 30215	PDTC144ET
7316	3198 010 42320	BC857BW
7317	3198 010 42320	BC857BW
7318	3198 010 42320	BC857BW
7319	3198 010 42320	BC857BW
7320	3198 010 42310	BC847BW
7322	3198 010 42310	BC847BW
7323	9352 625 24518	TDA9321H/N2
7402	3198 010 42310	BC847BW
7403	5322 130 60159	BC846B
7407	4822 130 60373	BC856B
7410	3198 010 42310	BC847BW
7411	5322 130 60159	BC846B
7414	3198 010 42310	BC847BW
7415	3198 010 42310	BC847BW
7703	4822 209 73852	PMBT2369
7706	9322 142 88668	LF25CDT
7707	5322 130 60159	BC846B
7708	5322 130 60159	BC846B
7709	5322 130 60159	BC846B
7710	5322 130 60159	BC846B
7711	2422 486 80938	Socket 32p f
7712	9351 870 00118	74HC573PW
7713	9352 688 09557	SAA4978H/V204
7714	9965 000 02179	MS81V04160-25TB
7715	4822 209 73852	PMBT2369
7717	9322 183 81668	MSM54V12222B-25JS
7718	9352 695 58557	SAA4993H/V1
7719	9322 183 81668	MSM54V12222B-25JS
7720	9322 160 50668	LD1117DT25
7722	9965 000 02179	MS81V04160-25TB
7723	9965 000 02179	MS81V04160-25TB
7724	9322 188 08702	T8F24EF-0002 EAGLE
7725	4822 209 73852	PMBT2369
7727	9322 170 14668	LF15ABDT
7728	5322 130 42718	BFS20
7729	5322 130 42718	BFS20
7730	5322 130 42718	BFS20
7731	5322 130 42718	BFS20
7732	5322 130 42718	BFS20
7733	5322 130 42718	BFS20
7999	3104 317 44671	Software (check Prod.Surv.)
7A00	4822 209 30095	LM833D
7A01	3198 010 42310	BC847BW
7A02⚠	9322 192 90702	MSP4410G-QI-C11
7A03	4822 209 30095	LM833D
7A06	5322 209 16349	TDA7309D
7A07	9322 183 05668	TS482ID
7A08	4822 130 60373	BC856B
7A09	4822 130 60373	BC856B
7A10	9340 425 20115	BC847BS
7A30⚠	9322 194 55668	MAS3529H-PR-C4
7A31	3198 010 42310	BC847BW
7A61	4822 209 30095	LM833D
7A62	4822 209 30095	LM833D
7A63⚠	9322 186 24671	DPL4519G-QI-C3
7I00	3198 010 42310	BC847BW
7I01	9340 425 20115	BC847BS
7I02	9340 425 20115	BC847BS
7I03	9340 425 20115	BC847BS
7I04	9340 425 20115	BC847BS
7I05	3198 010 42320	BC857BW
7I07	4822 130 60142	BC869
7I08	9340 425 10115	BC857BS
7I09	3198 010 42310	BC847BW
7I17	9322 116 87668	TEA6422D
7I20	9351 869 40118	74HC4053PW
7I22	9340 425 20115	BC847BS
7I23	9340 425 20115	BC847BS
7I24	9322 105 08668	TEA6415CD
7I25	9351 869 40118	74HC4053PW
7I32	9351 869 40118	74HC4053PW
7I35	3198 010 42310	BC847BW
7I36	3198 010 42310	BC847BW
7I37	3198 010 42320	BC857BW
7I38	3198 010 42320	BC857BW
7I44	9340 425 20115	BC847BS
7P00	5322 130 60159	BC846B
7P04	4822 130 60373	BC856B
7P05	5322 130 60159	BC846B
7P06	3198 010 42310	BC847BW
7P07	3198 010 42310	BC847BW
7P08	3198 010 42310	BC847BW
7P09	9352 625 24518	TDA9321H/N2
7P54	4822 209 12776	TDA8601T/C1
7P55	9350 399 00118	TDA9820T/V1
7P56	4822 209 17345	M62320FP
7P57	9351 869 40118	74HC4053PW
7PA0	3198 010 42310	BC847BW
7PA1	3198 010 42310	BC847BW
7PA2	3198 010 42310	BC847BW
7PA5	3198 010 42310	BC847BW
7PA6	9352 639 83557	SAB9083H/N4
7PA7	3198 010 42310	BC847BW
7PA8	3198 010 42310	BC847BW
7PA9	3198 010 42310	BC847BW
7PB1	9352 457 50115	74HC1G32GW
7PB2	3198 010 42310	BC847BW
7PB5	3198 010 42310	BC847BW
7PB6	3198 010 42310	BC847BW
7U01	4822 130 60373	BC856B
7U02	4822 130 60373	BC856B
7U03	9322 091 04668	SI4410DY
7U04	9322 091 04668	SI4410DY
7U05	4822 130 60373	BC856B
7U06	9340 425 20115	BC847BS
7U07	3198 010 42320	BC857BW
7U08	4822 130 42804	BC817-25
7U09	4822 130 42804	BC817-25
7U10	5322 130 60159	BC846B
7U11	5322 130 60159	BC846B
7U12	5322 130 60159	BC846B
7U13	3198 010 42310	BC847BW
7U14	3198 010 42310	BC847BW
7U15	3198 010 42320	BC857BW

AC Power Panel [E]

Various

0040	3104 304 25481	Mainsknob TDL
0046	3104 304 23471	Bracket mains unit FL11
0151	4822 256 91766	LED holder
0160	4822 256 91766	LED holder
0170	4822 256 10562	Photo diode holder
0201	2422 025 16268	Connector 2p m
0202	2422 025 16268	Connector 2p m
0241	2422 025 06354	Connector 9p m
0248	4822 267 10567	Connector 4P
1040	9322 155 82667	IR receiver TSOP2236
1051	2422 128 02972	Mains switch
1060	3104 328 27321	MS Panel
8202	3104 311 02571	Cable 2p3/680/2p3
8241	3104 311 04981	Cable 9p/820/9p
8245	3104 311 06391	Cable 4P/1000/4P HR WH

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2040	4822 124 41584	100µF 20% 10V
2060	4822 124 81151	22µF 50V
2070	3198 017 44740	470nF 10V 0603
2071	4822 124 40248	10µF 20% 63V
2080	2238 586 59812	100nF 20-80% 50V 0603

-WW-

3040	4822 117 13577	330Ω 1% 0805 1.25W
3041	4822 051 30103	10kΩ 5% 0.062W
3042	4822 051 30682	6.8kΩ 5% 0.062W
3043	4822 051 30471	470Ω 5% 0.062W
3052	4822 051 30331	330Ω 5% 0.062W
3057	4822 053 21335	3.3MΩ 5% 0.5W
3060	4822 051 30103	10kΩ 5% 0.062W
3061	4822 117 13577	330Ω 1% 0805 1.25W
3062	4822 117 11373	100Ω 1% 0805
3063	4822 051 30103	10kΩ 5% 0.062W
3064	4822 117 11373	100Ω 1% 0805
3066	4822 053 21335	3.3MΩ 5% 0.5W
3070	4822 051 30475	4.7MΩ 5% 0,062W 0603
3071	4822 051 30475	4.7MΩ 5% 0,062W 0603
3072	4822 051 30102	1kΩ 5% 0.062W
3073	4822 051 30332	3.3kΩ 5% 0.062W
3074	4822 051 30103	10kΩ 5% 0.062W
3075	4822 051 30472	4.7kΩ 5% 0.062W
3078	4822 051 30332	3.3kΩ 5% 0.062W
3080	4822 051 30103	10kΩ 5% 0.062W
3081	4822 051 30222	2.2kΩ 5% 0.062W
3082	4822 116 52176	10Ω 5% 0.5W
3998	4822 050 11002	1kΩ 1% 0.4W
9000	4822 051 30008	Jumper 0603
9005	4822 051 30008	Jumper 0603
9006	4822 051 30008	Jumper 0603
9007	4822 051 30008	Jumper 0603
9041	4822 051 30008	Jumper 0603
9042	4822 051 30008	Jumper 0603
9050	4822 051 30008	Jumper 0603
9051	4822 051 30008	Jumper 0603
9052	4822 051 30008	Jumper 0603

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6050	5322 130 83903	TLRC114
6060	9322 191 72682	VS LTL353UBJ
6061	4822 130 30621	1N4148
6070	4822 130 11595	BPW46

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7060	5322 130 60159	BC846B
7061	5322 130 60159	BC846B
7070	4822 209 70672	LM358N SEL.
7080	4822 130 40981	BC337-25
7081	5322 130 60159	BC846B

CRT Panel [F]

Various

0032	4822 492 70788	IC clamp
0034	4822 492 70788	IC clamp
0036	4822 492 70788	IC clamp
1298	2422 500 80063	Connector CRT 10p f
1424	2422 025 11244	Connector 7p m
1434	4822 267 10973	Connector 1P m
1483	2422 025 16382	Connector 3p m
1940	2422 025 12485	Connector 11p m

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2312	4822 126 14585	100nF 10% 50V
2313	4822 124 12373	47µF 20% 250V
2318	2238 916 15641	22nF 10% 25V 0603
2320	2252 648 08032	10nf 20% 500V
2324⚠	5322 121 44356	4.7nF 5% 2kV
2338	4822 121 40518	100nF 10% 250V
2339	4822 121 40518	100nF 10% 250V
2340	4822 121 40518	100nF 10% 250V
2341	2238 586 59812	100nF 20-80% 50V 0603
2342	4822 126 14241	330pF 50V 0603
2347	4822 124 80791	470µF 20% 16V
2348	5322 126 11583	10nF 10% 50V 0603
2358	4822 124 80791	470µF 20% 16V
2359	5322 126 11583	10nF 10% 50V 0603
2403	4822 124 41584	100µF 20% 10V
2404	4822 124 41584	100µF 20% 10V
2405	4822 122 31177	470pF 10% 500V
2409	5322 126 11583	10nF 10% 50V 0603
2410	2238 916 15641	22nF 10% 25V 0603
2411	2238 916 15641	22nF 10% 25V 0603
2420	2222 930 56627	2.2nF 10% 200V 0805
2428	3198 017 42230	22nF 50V
2435	2020 557 90734	22nF 10% 250V
2436	2020 012 93596	22µF 20% 250V
2437	5322 126 11578	1nF 10% 50V 0603
2438	2222 930 56627	2.2nF 10% 200V 0805
2439	2020 557 90734	22nF 10% 250V
2501	2238 586 59812	100nF 20-80% 50V 0603
2503	2238 586 59812	100nF 20-80% 50V 0603
2505	2238 586 59812	100nF 20-80% 50V 0603
2510	4822 126 14585	100nF 10% 50V
2511	4822 126 14585	100nF 10% 50V
2512	4822 122 30043	10nF 80% 63V

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3304	4822 052 10102	1kΩ 5% 0.33W
3305	4822 052 10108	1Ω 5% 0.33W
3310	4822 051 10102	1kΩ 2% 0.25W
3334	4822 050 11002	1kΩ 1% 0.4W
3338	3198 013 04710	470Ω 20% 0.5W
3339	3198 013 04710	470Ω 20% 0.5W
3340	3198 013 04710	470Ω 20% 0.5W
3341	4822 052 11479	47Ω 5% 0.5W
3345	4822 116 52191	33Ω 5% 0.5W
3347	3198 013 01520	1.5kΩ 2% 0.5W
3348	4822 117 13016	VDR 1mA/50V
3349	3198 013 01020	1kΩ 2% 0.5W
3350	4822 116 52175	100Ω 5% 0.5W
3351	4822 116 52175	100Ω 5% 0.5W
3352	4822 116 52175	100Ω 5% 0.5W
3356	4822 051 10102	1kΩ 2% 0.25W
3401	4822 053 11101	100Ω 5% 2W
3402	4822 116 52176	10Ω 5% 0.5W
3403	4822 052 10108	1Ω 5% 0.33W
3404	4822 052 10108	1Ω 5% 0.33W
3410	4822 051 30471	470Ω 5% 0.062W

3411	4822 117 11148	56kΩ 1% 0.1W
3412	4822 117 11148	56kΩ 1% 0.1W
3413	4822 051 30471	470Ω 5% 0.062W
3416	4822 051 20333	33kΩ 5% 0.1W
3417	4822 051 20333	33kΩ 5% 0.1W
3422	4822 051 30008	Jumper 0603
3448	4822 051 20333	33kΩ 5% 0.1W
3449	4822 117 11817	1.2kΩ 1% 1/16W
3451	4822 051 30102	1kΩ 5% 0.062W
3453	4822 051 30103	10kΩ 5% 0.062W
3454	4822 051 20333	33kΩ 5% 0.1W
3456	4822 051 30332	3.3kΩ 5% 0.062W
3458	4822 117 12139	22Ω 5% 0.062W
3459	4822 051 30101	100Ω 5% 0.062W
3460	4822 117 12139	22Ω 5% 0.062W
3465	4822 051 30008	Jumper 0603
3471	4822 117 11817	1.2kΩ 1% 1/16W
3473	4822 116 80176	1Ω 5% 0.5W
3474	4822 051 30103	10kΩ 5% 0.062W
3478	4822 116 80176	1Ω 5% 0.5W
3488	4822 051 30008	Jumper 0603
3489	4822 051 30109	10Ω 5% 0.062W
3492	4822 051 30008	Jumper 0603
3501	4822 051 10102	1kΩ 2% 0.25W
3501	4822 117 10361	680Ω 1% 0.1W
3502	4822 051 30331	330Ω 5% 0.062W
3506	4822 051 30471	470Ω 5% 0.062W
3507	4822 051 30008	Jumper 0603
3510	4822 116 52219	330Ω 5% 0.5W
3511	4822 051 10102	1kΩ 2% 0.25W
3511	4822 117 10361	680Ω 1% 0.1W
3512	4822 051 30331	330Ω 5% 0.062W
3516	4822 117 13632	100kΩ 1% 0603 0.62W
3517	4822 051 30102	1kΩ 5% 0.062W
3518	4822 051 30008	Jumper 0603
3520	4822 116 52226	560Ω 5% 0.5W
3521	4822 051 10102	1kΩ 2% 0.25W
3521	4822 117 10361	680Ω 1% 0.1W
3522	4822 051 30331	330Ω 5% 0.062W
3526	4822 051 30471	470Ω 5% 0.062W
3527	4822 051 30008	Jumper 0603
3530	4822 116 52228	680Ω 5% 0.5W
3532	4822 051 30471	470Ω 5% 0.062W
3533	4822 051 30008	Jumper 0603
3535	4822 051 20008	Jumper 0805
3536	4822 051 20008	Jumper 0805
3537	4822 051 20008	Jumper 0805
3539	4822 051 10102	1kΩ 2% 0.25W
3539	4822 117 10361	680Ω 1% 0.1W
3541	4822 051 10102	1kΩ 2% 0.25W
3541	4822 117 10361	680Ω 1% 0.1W
3543	4822 051 10102	1kΩ 2% 0.25W
3543	4822 117 10361	680Ω 1% 0.1W
3544	4822 116 52285	470kΩ 5% 0.5W
3545	4822 051 30109	10Ω 5% 0.062W
3546	4822 051 30109	10Ω 5% 0.062W
3547	4822 051 30109	10Ω 5% 0.062W
3999	4822 117 11817	1.2kΩ 1% 1/16W
9301	4822 051 30008	Jumper 0603
9303	4822 051 30008	Jumper 0603
9305	4822 051 30008	Jumper 0603
9306	4822 051 30008	Jumper 0603
9307	4822 051 30008	Jumper 0603
9308	4822 051 30008	Jumper 0603
9314	4822 051 30008	Jumper 0603
9323	4822 051 30008	Jumper 0603
9324	4822 051 30008	Jumper 0603
9325	4822 051 30008	Jumper 0603
9402	4822 051 30008	Jumper 0603
9403	4822 051 30008	Jumper 0603
9406	4822 051 20008	Jumper 0805
9408	4822 051 30008	Jumper 0603
9409	4822 051 30008	Jumper 0603
9428	4822 051 30008	Jumper 0603
9432	4822 051 30008	Jumper 0603
9437	4822 051 30008	Jumper 0603
9450	4822 051 20008	Jumper 0805
9452	4822 051 20008	Jumper 0805
9453	4822 051 20008	Jumper 0805

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5300▲	3104 308 20571	Trans. S13974-03
5304	4822 526 10704	Bead 45Ω at 50MHz
5305▲	2422 549 42896	Bead 120Ω at 100MHz
5308	4822 157 11867	5.6µH 5%
5309	4822 157 11867	5.6µH 5%
5310	4822 157 50964	100µH 20%
5400	4822 157 71467	39µH 10%
5500▲	2722 122 00337	D.Line 70ns SDL-5135
5501▲	2722 122 00337	D.Line 70ns SDL-5135
5502▲	2722 122 00337	D.Line 70ns SDL-5135

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6301	9340 553 52115	BAS321
6302	9340 553 52115	BAS321
6303	9340 553 52115	BAS321
6305	9340 553 52115	BAS321
6306	9340 553 52115	BAS321
6307	9340 553 52115	BAS321
6401	4822 130 11397	BAS316
6402	4822 130 11397	BAS316
6403	4822 130 11397	BAS316
6404	4822 130 11397	BAS316
6405	3139 120 52021	BYV29X-500
6407	4822 130 11397	BAS316
6420	5322 130 34337	BAV99
6421	5322 130 34337	BAV99
6422	5322 130 34337	BAV99
6426	4822 130 30613	BAW62
6427	4822 130 30613	BAW62
6428	4822 130 30613	BAW62
6430	9340 548 61115	PDZ12B
6431	4822 130 11397	BAS316
6432	9340 553 52115	BAS321
6500	4822 130 11397	BAS316
6501	4822 130 11397	BAS316
6502	4822 130 11397	BAS316
6503	4822 130 41601	BYV95A

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7330	9352 694 46112	TDA6118JF/N1
7340	9352 694 46112	TDA6118JF/N1
7350	9352 694 46112	TDA6118JF/N1
7414	5322 130 62804	BCP53
7415	5322 130 63033	BCP56
7422	5322 130 42718	BFS20
7427	5322 130 60159	BC846B
7428	4822 130 60373	BC856B
7429	5322 130 63033	BCP56
7430	5322 130 62804	BCP53
7500	5322 130 42718	BFS20
7501	5322 130 60159	BC846B
7503	5322 130 42718	BFS20
7504	5322 130 60159	BC846B
7506	5322 130 42718	BFS20
7507	5322 130 60159	BC846B

DC Shift Panel [G]

Various

0317	4822 265 20723	Connector 2p m
0318	4822 265 20723	Connector 2p m
1430	2422 086 10581	Fuse 400mA 65V
8317	3104 311 01421	Cable 2p3/220/2p3

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2430	4822 122 31177	470pF 10% 500V
2431	4822 122 31177	470pF 10% 500V

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5430	3128 138 38911	DC-shift coil CU15

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6432	9340 317 00133	BYD33V
6433	9340 317 00133	BYD33V

Horizontal DAF Panel [I]

Various

0034	3104 304 23041	DAF bracket EMGS
1417	4822 265 20723	Connector 2p m
1418	2422 025 16374	Connector 2p m
1419	4822 265 20723	Connector 2p m
1491	3104 311 02452	Cable 1P/340/1P
1497	4822 267 10973	Connector 1P m

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2800▲	2222 375 90188	390pF 5% 2kV
2821	2222 479 90166	68nF 5% 400V
2890▲	2222 375 90188	390pF 5% 2kV

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3998	4822 116 52207	1.2kΩ 5% 0.5W

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5800▲	2422 531 02437	Transformer S21975-03
5801	2422 531 02435	Transformer C948-02

DVD Eject Button [K]

Various

0052	3104 304 25611	DVD eject button TDL
0202	4822 256 91766	LED holder
1200	4822 276 13775	Switch
1264	2422 025 16601	3p male
8264	3104 311 04671	Cable 3p/1200/3p

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9200	4822 051 30008	Jumper 0603

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6200	4822 130 11423	PLVA2656A
6202	9322 191 72682	VS LTL353UBJ

LCD Panel [L]

Various

0154	3104 307 99931	LCD window assy
0155	3104 307 99971	LCD top cover assy
0156	3104 308 10641	LCD bottom cover assy

Side I/O Panel [O]

Various

0205	3104 304 25621	Side I/O bracket TDL
1016	3104 328 26481	Side I/O assy
1326	4822 267 10975	Connector 3p
1327	4822 267 31014	Socket headphone
1328	2422 026 05133	Connector SVHS 4p f
1936	2422 025 12485	Connector 11p m
8936	3104 311 04121	Cable 11P/680/11P

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2803	5322 126 10733	680pF 5% 50V
2804	5322 122 32531	100pF 5% 50V
2805	5322 122 32531	100pF 5% 50V
2806	5322 126 10733	680pF 5% 50V
2807	4822 126 14076	220nF 25V. 20%
2813	4822 124 22652	2.2µF 20% 50V
2832	5322 122 31863	330pF 5% 63V
2834	5322 122 31863	330pF 5% 63V
2840	4822 122 33177	10nF 20% 50V
2841	4822 122 33177	10nF 20% 50V

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3803	4822 050 11002	1kΩ 1% 0.4W
3804	4822 050 11002	1kΩ 1% 0.4W
3808	4822 051 20008	Jumper 0805
3809	4822 051 20008	Jumper 0805
3814	4822 117 10833	10kΩ 1% 0.1W
3816	4822 051 20008	Jumper 0805
3826	4822 116 52199	68Ω 5% 0.5W
3827	4822 116 52199	68Ω 5% 0.5W
3828	4822 116 52199	68Ω 5% 0.5W
3829	4822 116 52199	68Ω 5% 0.5W
3830	4822 050 21003	10kΩ 1% 0.6W
3835	4822 116 52175	100Ω 5% 0.5W
3842	4822 050 21003	10kΩ 1% 0.6W
4800	4822 051 20008	Jumper 0805
4801	4822 051 20008	Jumper 0805
4802	4822 051 20008	Jumper 0805
4803	4822 051 20008	Jumper 0805

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6801	9322 129 38685	BZM55-C6V8
6802	9322 129 38685	BZM55-C6V8

6803	9322 129 40685	BZM55-C10
6804	9322 129 40685	BZM55-C10
6805	9322 129 40685	BZM55-C10
6806	9322 129 40685	BZM55-C10
6807	9322 129 38685	BZM55-C6V8
6808	9322 129 38685	BZM55-C6V8

Top Control Panel [P]

Various

1207	4822 267 10565	Connector 4p
1411	2422 549 44534	Filter 4.5MHz
1701	4822 276 13775	Switch
1702	4822 276 13775	Switch
1703	4822 276 13775	Switch
1704	4822 276 13775	Switch
1705	4822 276 13775	Switch

-WW-

3008	4822 117 10845	620Ω 1% 0.1W
3010	4822 117 11534	1.1kΩ 1% 0.1W
3011	4822 117 11951	2kΩ 1% 0.1W
3013	4822 117 13528	200Ω 1% 0.125W 0805
3014	4822 051 20391	390Ω 5% 0.1W
3017	4822 117 13577	330Ω 1% 0805 1.25W
3018	4822 117 13577	330Ω 1% 0805 1.25W
3019	4822 117 13577	330Ω 1% 0805 1.25W
3020	4822 117 13577	330Ω 1% 0805 1.25W
3021	4822 117 13577	330Ω 1% 0805 1.25W
3022	4822 117 13577	330Ω 1% 0805 1.25W
3023	4822 117 13577	330Ω 1% 0805 1.25W
3024	4822 117 13577	330Ω 1% 0805 1.25W
3025	4822 117 13577	330Ω 1% 0805 1.25W
3026	4822 117 13577	330Ω 1% 0805 1.25W

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6001	9322 190 20685	LED C930UBK
6002	9322 190 20685	LED C930UBK
6003	9322 190 20685	LED C930UBK
6004	9322 190 20685	LED C930UBK
6005	9322 190 20685	LED C930UBK
6006	9322 190 20685	LED C930UBK
6007	9322 190 20685	LED C930UBK
6008	9322 190 20685	LED C930UBK
6009	9322 190 20685	LED C930UBK
6010	9322 190 20685	LED C930UBK

Auto Scavem [SC]

Various

0085	3104 304 24971	Bracket autoscavem
1440	2422 025 12485	Connector 11p m
1940	2422 025 12485	Connector 11p m
1955	4822 267 10735	Connector 3p m
8440	3104 311 05131	Cable 11P/480/11P
8440	3104 311 05882	Cable 11P/400/11P

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2000	4822 126 14223	2.2pF +-0.25pF 50V 0603
2002	4822 126 13887	4.7pF 50V
2003	4822 126 13887	4.7pF 50V
2004	3198 016 31080	1pF 25% 50V 0603
2006	2238 586 59812	100nF 20-80% 50V 0603
2008	2238 916 15641	22nF 10% 25V 0603
2010	2238 586 59812	100nF 20-80% 50V 0603
2012	2238 916 15641	22nF 10% 25V 0603
2014	2238 916 15641	22nF 10% 25V 0603
2016	4822 122 33741	10pF 10% 50V
2020	2238 916 15641	22nF 10% 25V 0603
2038	2238 916 15641	22nF 10% 25V 0603
2040	4822 126 14225	56pF 5% 50V 0603
2041	5322 122 32163	5.6pF 20% 100V
2208	4822 124 41584	100µF 20% 10V
2600	4822 124 80791	470µF 20% 16V
2602	5322 122 32654	22nF 10% 63V
2605	3198 017 41050	1µF 10V 0603
2607	5322 122 32654	22nF 10% 63V

-WW-

3000	4822 051 30101	100Ω 5% 0.062W
3002	4822 051 30101	100Ω 5% 0.062W
3004	4822 051 30101	100Ω 5% 0.062W
3006	4822 051 30102	1kΩ 5% 0.062W
3008	4822 051 30102	1kΩ 5% 0.062W
3010	4822 051 30102	1kΩ 5% 0.062W
3012	4822 051 30332	3.3kΩ 5% 0.062W
3014	4822 117 12903	1.8kΩ 1% 0.063W 0603
3016	4822 117 12902	8.2kΩ 1% 0.063W 0603
3018	4822 051 30681	680Ω 5% 0.062W
3020	4822 051 30471	470Ω 5% 0.062W
3022	4822 051 30393	39kΩ 5% 0.062W
3024	4822 051 30273	27kΩ 5% 0.062W
3028	4822 051 30223	22kΩ 5% 0.062W
3030	4822 051 30683	68kΩ 5% 0.062W
3032	4822 117 12903	1.8kΩ 1% 0.063W 0603
3034	4822 051 30222	2.2kΩ 5% 0.062W
3036	4822 051 30332	3.3kΩ 5% 0.062W
3038	4822 051 30561	560Ω 5% 0.062W
3040	4822 117 12925	47kΩ 1% 0.063W 0603
3042	4822 051 30682	6.8kΩ 5% 0.062W
3044	4822 051 30102	1kΩ 5% 0.062W
3046	4822 051 30102	1kΩ 5% 0.062W
3048	4822 051 30102	1kΩ 5% 0.062W
3050	4822 051 30561	560Ω 5% 0.062W
3052	4822 051 30561	560Ω 5% 0.062W
3054	4822 051 30102	1kΩ 5% 0.062W
3056	4822 051 30102	1kΩ 5% 0.062W
3058	4822 051 30471	470Ω 5% 0.062W
3060	4822 051 30471	470Ω 5% 0.062W
3062	4822 051 30222	2.2kΩ 5% 0.062W
3064	4822 117 12971	15Ω 5% 0.62W 0603
3066	4822 117 12902	8.2kΩ 1% 0.063W 0603
3068	4822 051 30681	680Ω 5% 0.062W
3070	4822 117 12902	8.2kΩ 1% 0.063W 0603
3072	4822 051 30152	1.5kΩ 5% 0.062W
3074	4822 051 30101	100Ω 5% 0.062W
3076	4822 117 11817	1.2kΩ 1% 1/16W
3078	4822 051 30102	1kΩ 5% 0.062W
3093	4822 051 30152	1.5kΩ 5% 0.062W
3106	4822 051 30472	4.7kΩ 5% 0.062W
3108	4822 051 30273	27kΩ 5% 0.062W
3110	4822 051 30392	3.9kΩ 5% 0.063W 0603
3112	4822 051 30222	2.2kΩ 5% 0.062W
3114	4822 051 30101	100Ω 5% 0.062W
3116	4822 051 30102	1kΩ 5% 0.062W
3118	4822 051 30103	10kΩ 5% 0.062W
3120	4822 051 30103	10kΩ 5% 0.062W
3500	4822 051 30101	100Ω 5% 0.062W
3502	4822 051 30101	100Ω 5% 0.062W
3600	4822 117 13574	1.5Ω 5% 1206
3999	4822 051 30152	1.5kΩ 5% 0.062W
9002	4822 051 30008	Jumper 0603
9010	4822 051 30008	Jumper 0603
9020	4822 051 30008	Jumper 0603
9033	4822 116 52175	100Ω 5% 0.5W
9045	4822 051 30008	Jumper 0603
9046	4822 051 30008	Jumper 0603
9047	4822 051 30008	Jumper 0603

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5600	4822 157 11867	5.6µH 5%
5601	4822 157 11867	5.6µH 5%

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6000	5322 130 80119	BBY40

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7000	4822 130 60373	BC856B
7002	4822 130 60373	BC856B
7004	4822 130 60373	BC856B
7006	5322 130 42718	BFS20
7008	4822 130 60373	BC856B
7010	5322 130 42718	BFS20
7012	5322 130 42718	BFS20
7014	4822 130 60383	BF824
7016	5322 130 42718	BFS20
7018	5322 130 42718	BFS20
7020	4822 130 60383	BF824
7022	5322 130 42718	BFS20
7024	5322 130 42718	BFS20
7026	5322 130 42718	BFS20
7040	5322 130 42718	BFS20
7042	4822 130 60383	BF824
7500	5322 209 90559	TDA8444T/N4

Interface Panel [T]

Various

0203	3104 304 25191	TDL panel support
1005▲	3103 308 54861	Tuner ECO6 AS/02 RDS
1120	4822 265 11515	Connector 8P f
1146	4822 267 10637	Connector 5P m v 2.00
1250	2422 025 17388	Connector 30p f
1253	2422 025 18092	Connector 30p f
1260	2422 025 18004	Connector 24p m
1280	4822 267 10734	Connector 5p m
1300	2422 128 02866	Switch 50mA 12V
1400▲	2422 543 01288	Crystal 20MHz
1401▲	2422 086 11021	Fuse SM T 800 mA 63V
1402▲	2422 086 11009	Fuse T1.A 63V 2410
1406▲	2422 543 01287	crystal 4.332MHz
1U02	2422 025 17104	Connector 7p m
8120	3104 311 05341	FFC Foil 8P/60/8P
8260	3104 311 05261	Cable 24P/1000/24P
8952	3104 311 03171	Cable 5P/280/5P KR

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2006	3198 035 71040	100nF 10% 16V 0402
2007	4822 124 23002	10µF 20% 16V
2008	3198 035 71040	100nF 10% 16V 0402
2009	4822 124 23002	10µF 20% 16V
2010	3198 035 71040	100nF 10% 16V 0402
2011	4822 124 23002	10µF 20% 16V
2012	4822 122 33761	22pF 5% 50V
2013	4822 122 33761	22pF 5% 50V
2014	4822 126 13879	220nF 20% 16V
2015	4822 126 13879	220nF 20% 16V
2016	2238 586 59812	100nF 20-80% 50V 0603
2017	2238 916 15641	22nF 10% 25V 0603
2018	4822 124 12095	100µF 20% 16V
2019	2238 586 59812	100nF 20-80% 50V 0603
2020	5322 126 11583	10nF 10% 50V 0603
2022	5322 126 11583	10nF 10% 50V 0603
2023	4822 124 80151	47µF 20% 16V
2024	4822 124 80151	47µF 20% 16V
2025	2238 869 15101	100pF 5% 50V 0402
2026	2238 586 59812	100nF 20-80% 50V 0603
2027	2238 586 59812	100nF 20-80% 50V 0603
2028	2238 916 15641	22nF 10% 25V 0603
2029	2238 586 59812	100nF 20-80% 50V 0603
2030	4822 126 13881	470pF 5% 50V
2031	4822 126 13881	470pF 5% 50V
2032	4822 126 13881	470pF 5% 50V
2033	4822 126 13881	470pF 5% 50V
2034	4822 124 23002	10µF 20% 16V
2100	4822 126 14249	560pF 10% 50V 0603
2101	3198 035 71040	100nF 10% 16V 0402
2102	3198 035 71040	100nF 10% 16V 0402
2103	2020 552 96618	1nF 10% 50V 0402
2105	2020 552 96448	1µF 10% 16V
2109	2020 552 96448	1µF 10% 16V
2110	2020 552 96448	1µF 10% 16V
2111	2222 867 15339	33pF 5% 50V 0603
2112	3198 035 71040	100nF 10% 16V 0402
2113	2020 552 96448	1µF 10% 16V
2114	2022 552 05615	2.2µF 10% 6.3V 0805
2115	3198 035 71040	100nF 10% 16V 0402
2116	2222 867 15339	33pF 5% 50V 0603
2117	2238 586 59812	100nF 20-80% 50V 0603
2118	4822 126 11785	47pF 5% 50V 0603
2119	4822 126 14226	82pF 5% 50V 0603
2121	2020 552 96448	1µF 10% 16V
2122	2020 552 96448	1µF 10% 16V
2124	4822 126 14241	330pF 50V 0603
2125	4822 124 80151	47µF 20% 16V
2127	2020 552 96448	1µF 10% 16V
2128	2020 552 96448	1µF 10% 16V
2303	4822 124 80151	47µF 20% 16V
2320	3198 035 71040	100nF 10% 16V 0402
2400	2238 586 59812	100nF 20-80% 50V 0603
2401	2020 021 91642	470µF 20% 16V
2402	2238 586 59812	100nF 20-80% 50V 0603
2403	2020 021 91642	470µF 20% 16V
2404	4822 126 14238	2.2nF 50V 0603
2405	5322 124 41945	22µF 20% 35V SMD
2406	4822 126 14238	2.2nF 50V 0603
2407	2238 586 59812	100nF 20-80% 50V 0603
2408	2238 586 59812	100nF 20-80% 50V 0603
2409	2238 916 15641	22nF 10% 25V 0603
2410	2238 916 15641	22nF 10% 25V 0603
2413	2020 021 91642	470µF 20% 16V
2414	2020 552 94427	100pF 5% 50v 0603
2415	2238 586 59812	100nF 20-80% 50V 0603
2417	2020 552 96326	220nF 10% 16V

2418	2238 586 59812	100nF 20-80% 50V 0603
2419	2020 024 90166	10µF 20% 35V
2420	4822 124 80151	47µF 20% 16V
2421	2238 916 15641	22nF 10% 25V 0603
2422	2020 024 90166	10µF 20% 35V
2423	2020 024 90166	10µF 20% 35V

3002	4822 051 30105	1MΩ 5% 0.062W
3003	3198 031 11010	4 x 100Ω 5% 1206
3004	3198 031 11010	4 x 100Ω 5% 1206
3005	4822 117 13545	100Ω 1% 0402
3006	4822 051 30105	1MΩ 5% 0.062W
3007	4822 051 30333	33kΩ 5% 0.062W
3008	4822 117 12925	47kΩ 1% 0.063W 0603
3009	2322 702 60824	820kΩ 5% 0603
3010	4822 051 30105	1MΩ 5% 0.062W
3011	4822 051 30105	1MΩ 5% 0.062W
3012	4822 051 30105	1MΩ 5% 0.062W
3013	4822 117 13632	100kΩ 1% 0603 0.62W
3014	4822 051 30102	1kΩ 5% 0.062W
3017	3198 031 03390	33Ω 1% 0402
3018	4822 117 13606	10kΩ 5% 0.01W 0402
3019	4822 117 13606	10kΩ 5% 0.01W 0402
3020	4822 117 13543	470Ω 5% 0402
3021	4822 117 13545	100Ω 1% 0402
3022	4822 117 13606	10kΩ 5% 0.01W 0402
3023	4822 117 13543	470Ω 5% 0402
3024	4822 117 13545	100Ω 1% 0402
3025	4822 117 13548	1kΩ 5% 0402
3026	4822 117 13606	10kΩ 5% 0.01W 0402
3027	3198 031 01530	15kΩ 5% 0.01W 0402
3029	4822 117 13606	10kΩ 5% 0.01W 0402
3030	4822 117 13545	100Ω 1% 0402
3031	4822 117 13545	100Ω 1% 0402
3032	4822 117 13545	100Ω 1% 0402
3033	4822 117 13545	100Ω 1% 0402
3034	4822 117 13545	100Ω 1% 0402
3035	4822 117 13545	100Ω 1% 0402
3037	4822 117 13601	22kΩ 5% 0402
3039	4822 117 13545	100Ω 1% 0402
3040	4822 117 13545	100Ω 1% 0402
3041	4822 117 13545	100Ω 1% 0402
3042	4822 117 11151	1Ω 5%
3043	4822 117 13545	100Ω 1% 0402
3044	4822 117 10833	10kΩ 1% 0.1W
3046	4822 117 13545	100Ω 1% 0402
3047	4822 117 13545	100Ω 1% 0402
3048	4822 051 20472	4.7kΩ 5% 0.1W
3049	4822 051 30102	1kΩ 5% 0.062W
3050	4822 051 30102	1kΩ 5% 0.062W
3051	4822 051 30102	1kΩ 5% 0.062W
3054	4822 117 13606	10kΩ 5% 0.01W 0402
3057	4822 117 13606	10kΩ 5% 0.01W 0402
3059	4822 117 13606	10kΩ 5% 0.01W 0402
3060	3198 031 06820	6.8kΩ 5% 0.01W 0402
3063	4822 117 13545	100Ω 1% 0402
3064	4822 117 13545	100Ω 1% 0402
3065	4822 117 13606	10kΩ 5% 0.01W 0402
3066	4822 117 13548	1kΩ 5% 0402
3067	4822 117 13606	10kΩ 5% 0.01W 0402
3068	4822 117 13606	10kΩ 5% 0.01W 0402
3069	4822 117 13606	10kΩ 5% 0.01W 0402
3070	4822 117 13606	10kΩ 5% 0.01W 0402
3071	4822 117 13606	10kΩ 5% 0.01W 0402
3072	4822 117 10833	10kΩ 1% 0.1W
3073	4822 117 13606	10kΩ 5% 0.01W 0402
3074	4822 117 13606	10kΩ 5% 0.01W 0402
3075	4822 117 13545	100Ω 1% 0402
3076	3198 031 03910	390Ω 1% 0402
3078	4822 117 11151	1Ω 5%
3082	4822 051 30471	470Ω 5% 0.062W
3083	4822 051 30681	680Ω 5% 0.062W
3084	4822 051 30102	1kΩ 5% 0.062W
3102	4822 051 30223	22kΩ 5% 0.062W
3103	4822 117 13543	470Ω 5% 0402
3104	4822 117 11297	100kΩ 5% 0.1W
3105	4822 117 13548	1kΩ 5% 0402
3106	3198 031 04730	47Ω 5% 0402
3107	4822 117 13606	10kΩ 5% 0.01W 0402
3108	4822 117 11297	100kΩ 5% 0.1W
3109	4822 117 11297	100kΩ 5% 0.1W
3110	4822 117 13545	100Ω 1% 0402
3111	3198 031 04730	47Ω 5% 0402
3112	4822 117 13545	100Ω 1% 0402
3113	4822 051 30333	33kΩ 5% 0.062W
3115	4822 051 30333	33kΩ 5% 0.062W
3116	4822 051 30333	33kΩ 5% 0.062W
3117	4822 117 11297	100kΩ 5% 0.1W
3119	3198 031 04740	470 kΩ 5% 0402
3120	4822 051 30333	33kΩ 5% 0.062W
3121	4822 117 13632	100kΩ 1% 0603 0.62W
3125	3198 031 04740	470 kΩ 5% 0402
3126	2322 705 87564	560kΩ 5% 0402
3127	3198 031 04720	4.7kΩ 5% 0402
3128	4822 051 30333	33kΩ 5% 0.062W
3129	3198 031 01540	150kΩ 5% 0402
3130	4822 117 13632	100kΩ 1% 0603 0.62W
3133	3198 031 01540	150kΩ 5% 0402
3134	4822 051 30153	15kΩ 5% 0.062W
3135	4822 051 30153	15kΩ 5% 0.062W
3136	4822 117 11297	100kΩ 5% 0.1W
3137	4822 117 13632	100kΩ 1% 0603 0.62W
3138	4822 051 30152	1.5kΩ 5% 0.062W
3139	5322 117 11726	10Ω 5%
3140	5322 117 11726	10Ω 5%
3142	4822 117 13632	100kΩ 1% 0603 0.62W
3143	4822 117 13632	100kΩ 1% 0603 0.62W
3144	4822 117 13632	100kΩ 1% 0603 0.62W
3146	4822 117 13632	100kΩ 1% 0603 0.62W
3321	4822 117 13545	100Ω 1% 0402
3322	4822 117 13545	100Ω 1% 0402
3323	4822 117 13545	100Ω 1% 0402
3324	3198 031 01530	15kΩ 5% 0.01W 0402
3327	3198 031 01530	15kΩ 5% 0.01W 0402
3329	3198 031 01530	15kΩ 5% 0.01W 0402
3330	3198 031 01530	15kΩ 5% 0.01W 0402
3332	3198 031 01530	15kΩ 5% 0.01W 0402
3333	4822 051 30153	15kΩ 5% 0.062W
3338	4822 051 30221	220Ω 5% 0.062W
3400	4822 051 30223	22kΩ 5% 0.062W
3401	4822 117 12902	8.2kΩ 1% 0.063W 0603
3402	4822 117 11449	2.2kΩ 5% 0.1W 0805
3403	4822 117 10353	150Ω 1% 0.1W
3404	4822 051 30392	3.9kΩ 5% 0.063W 0603
3405	4822 051 30102	1kΩ 5% 0.062W
3406	4822 117 13632	100kΩ 1% 0603 0.62W
3407	4822 051 30153	15kΩ 5% 0.062W
3408	4822 051 30221	220Ω 5% 0.062W
3409	4822 051 30102	1kΩ 5% 0.062W
3410	4822 117 11503	220Ω 1% 0.1W
3411	3198 031 08220	8.2kΩ 5% 0,5W
3418	4822 051 30562	5.6kΩ 5% 0.063W 0603
3419	4822 117 13606	10kΩ 5% 0.01W 0402
3420	4822 051 30102	1kΩ 5% 0.062W
3421	4822 117 13632	100kΩ 1% 0603 0.62W
3422	4822 117 11297	100kΩ 5% 0.1W
3423	4822 117 11297	100kΩ 5% 0.1W
3424	4822 117 10833	10kΩ 1% 0.1W
3426	3198 031 08220	8.2kΩ 5% 0,5W
3427	2322 704 61303	13kΩ 1% 0603
3428	4822 051 30562	5.6kΩ 5% 0.063W 0603
3429	4822 051 30562	5.6kΩ 5% 0.063W 0603
3430	4822 117 13606	10kΩ 5% 0.01W 0402
3431	4822 117 12706	10kΩ 1% 0.063W 0603
3432	4822 117 13548	1kΩ 5% 0402
3433	4822 051 30392	3.9kΩ 5% 0.063W 0603
3434	4822 051 20182	1.8kΩ 5% 0.1W
3999	4822 117 13606	10kΩ 5% 0.01W 0402
9002	4822 051 30008	Jumper 0603
9003	4822 051 30008	Jumper 0603
9005	4822 051 30008	Jumper 0603
9097	4822 051 20008	Jumper 0805
9123	4822 051 30008	Jumper 0603
9300	4822 117 13605	Jumper 0402
9301	4822 117 13605	Jumper 0402
9317	4822 051 30008	Jumper 0603
9320	4822 117 13605	Jumper 0402

5000	4822 157 11716	Bead 30Ω at 100MHz
5100	4822 157 11716	Bead 30Ω at 100MHz
5101	4822 157 11716	Bead 30Ω at 100MHz
5102	2422 549 43062	Bead 600Ω at 100MHz
5103	2422 549 43062	Bead 600Ω at 100MHz
5104	2422 549 43062	Bead 600Ω at 100MHz
5105	2422 549 43062	Bead 600Ω at 100MHz
5106	2422 549 43062	Bead 600Ω at 100MHz
5400	4822 157 11716	Bead 30Ω at 100MHz
5401	4822 157 11716	Bead 30Ω at 100MHz
5402	2422 535 94134	10µH 20% 0805
5403	2422 535 94134	10µH 20% 0805
5406	2422 536 00261	47µH 20%

6000	4822 130 11423	PLVA2656A
6001	4822 130 11423	PLVA2656A
6002	4822 130 11423	PLVA2656A
6003	4822 130 11423	PLVA2656A
6004	4822 130 11423	PLVA2656A
6005	4822 130 11423	PLVA2656A
6006	4822 130 11423	PLVA2656A
6007	4822 130 11397	BAS316
6008	4822 130 11423	PLVA2656A
6009	4822 130 11397	BAS316
6010	4822 130 11397	BAS316
6012	4822 130 11397	BAS316
6013	4822 130 11397	BAS316
6014	4822 130 11397	BAS316
6015	9340 548 61115	PDZ12B
6101	5322 130 34331	BAV70
6400▲	9322 165 17668	STPS2L30A
6403	4822 130 11397	BAS316
6404	4822 130 11397	BAS316
6405	4822 130 80622	BAT54
6406	9340 548 61115	PDZ12B
6408	9340 548 52115	PDZ5.1B
6409	9340 548 61115	PDZ12B
6410	4822 130 11397	BAS316
6411	3198 020 55680	BZX384-C5V6
6412	4822 130 11397	BAS316
6413	4822 130 11397	BAS316
6414	9340 548 61115	PDZ12B

7001	5322 130 60159	BC846B
7002▲	9352 674 48518	P89C664HBA/00
7003	5322 130 60159	BC846B
7004	9351 546 30118	PCF1252-1T/F4
7005▲	9322 158 57668	LF90CPT
7006	5322 209 70225	LM393D
7007	9322 091 04668	SI4410DY
7009▲	9322 178 31668	L9997ND
7010	4822 130 60373	BC856B
7011	9322 156 81668	M24C32-WMN6TNKSA
7100▲	9352 613 91118	SAA6588T/V2
7101	4822 209 30095	LM833D
7103	9351 869 40118	74HC4053PW
7105	3198 010 42310	BC847BW
7106	9340 425 20115	BC847BS
7306	5322 209 33172	PCF8574AT
7400▲	9322 163 74668	L4978D
7401	3198 010 42310	BC847BW
7402	4822 130 42804	BC817-25
7404	9340 560 36235	BSH111
7405	3198 010 42320	BC857BW
7406	3198 010 42310	BC847BW
7407▲	9322 181 15668	IRFR9024N
7408	9340 425 20115	BC847BS
7409	9322 091 04668	SI4410DY
7410	3198 010 42310	BC847BW

Radio Tuner Panel [RAD]

Various

1102	4822 267 10283	YKD31-0432
1103	4822 265 31184	S2B-XH-A-BK
1110	2422 542 90071	FM frontend FE450-G01
1120	4822 265 11515	Connector 8P f

2102	4822 126 14305	100nF 10% 16V 0603
2106	2020 800 00204	Trim. 2.2pF- 4.2pF 100V
2107	4822 121 51319	1µF 10% 63V
2108	4822 122 31765	100pF 2% 63V
2109	4822 122 33741	10pF 10% 50V
2120	4822 122 33761	22pF 5% 50V
2122	5322 126 11579	3.3nF 10% 63V
2123	2238 861 18391	390pF 5% 50V 0805
2125	2238 861 18561	560pF 5% 50V 0805
2127	4822 126 13879	220nF 20% 16V
2128	4822 124 40248	10µF 20% 63V
2129	4822 124 41584	100µF 20% 10V
2130	4822 126 14494	22nF 10% 25V 0603
2131	3198 017 44740	470nF 10V 0603
2132	3198 017 44740	470nF 10V 0603
2133	4822 124 21913	1µF 20% 63V
2134	2020 552 94387	18nF 5% 50V 0603
2134	3198 017 31530	15nF 20% 50V 0603
2135	3198 017 31530	15nF 20% 50V 0603
2135	4822 122 33893	18nF 10% 63V
2136	4822 126 13879	220nF 20% 16V
2137	4822 126 13879	220nF 20% 16V
2138	4822 124 22652	2.2µF 20% 50V
2139	4822 122 33752	15pF 5% 50V
2140	4822 126 14226	82pF 5% 50V 0603
2141	4822 126 14305	100nF 10% 16V 0603
2143	4822 126 13879	220nF 20% 16V
2144	4822 124 21913	1µF 20% 63V
2145	4822 126 13883	220pF 5% 50V

2146	4822 122 33575	220pF 5% 63V
2147	4822 122 33575	220pF 5% 63V
2148	4822 122 33127	2.2nF 10% 63V
2149	4822 126 11671	33pF 5% 50V 0603
2150	4822 126 13838	100nF 80-20% 50V
2159	4822 126 11671	33pF 5% 50V 0603
2162	4822 124 81151	22µF 50V
2163	4822 126 14305	100nF 10% 16V 0603
2164	3198 017 44740	470nF 10V 0603
2165	4822 126 14305	100nF 10% 16V 0603
2166	5322 122 31647	1nF 10% 63V
2167	4822 126 11663	12pF 5% 50V 0603
2169	4822 126 14238	2.2nF 50V 0603
2180	5322 126 11583	10nF 10% 50V 0603
2191	4822 124 41584	100µF 20% 10V

3105	4822 051 30221	220Ω 5% 0.062W
3108	4822 051 30222	2.2kΩ 5% 0.062W
3109	4822 051 30472	4.7kΩ 5% 0.062W
3123	4822 051 30472	4.7kΩ 5% 0.062W
3125	4822 051 30103	10kΩ 5% 0.062W
3128	4822 051 30222	2.2kΩ 5% 0.062W
3130	4822 117 12968	820Ω 5% 0.62W
3131	4822 117 12968	820Ω 5% 0.62W
3132	4822 051 30479	47Ω 5% 0.062W
3134	4822 051 30223	22kΩ 5% 0.062W
3135	4822 051 30102	1kΩ 5% 0.062W
3137	4822 051 30223	22kΩ 5% 0.062W
3141	4822 051 30563	56kΩ 5% 0.062W
3142	4822 100 12159	100k 30%
3143	4822 051 30223	22kΩ 5% 0.062W
3144	4822 051 30102	1kΩ 5% 0.062W
3145	4822 051 30222	2.2kΩ 5% 0.062W
3146	4822 117 12139	22Ω 5% 0.062W
3150	4822 051 30103	10kΩ 5% 0.062W
3151	4822 051 30683	68kΩ 5% 0.062W
3152	4822 051 30471	470Ω 5% 0.062W
3153	4822 051 30471	470Ω 5% 0.062W
3154	4822 051 30331	330Ω 5% 0.062W
3155	4822 051 30151	150Ω 5% 0.062W
3158	4822 051 30471	470Ω 5% 0.062W
3159	4822 051 30471	470Ω 5% 0.062W
3160	4822 051 30471	470Ω 5% 0.062W
3161	4822 051 30223	22kΩ 5% 0.062W
3167	4822 051 20121	120Ω 5% 0,1W
3168	4822 051 30121	120Ω 5% 0.062W
3169	4822 051 30154	150kΩ 5% 0.062W
3171	4822 117 12925	47kΩ 1% 0.063W 0603
3172	4822 051 30562	5.6kΩ 5% 0.063W 0603
3176	4822 051 30333	33kΩ 5% 0.062W
3180	4822 051 30103	10kΩ 5% 0.062W
3190	4822 051 30121	120Ω 5% 0.062W
3191	4822 051 30121	120Ω 5% 0.062W
3192	4822 051 30331	330Ω 5% 0.062W
3193	4822 051 30331	330Ω 5% 0.062W
3194	4822 051 30222	2.2kΩ 5% 0.062W
3195	4822 051 30101	100Ω 5% 0.062W
4105	4822 051 20008	Jumper 0805
4106	4822 051 30008	Jumper 0603
4107	4822 051 20008	Jumper 0805

5103	2422 549 44107	Ind var 252KHz
5109	4822 157 71639	7MJA10H-A-TF21
5110	4822 242 70665	Filter 10.7M
5111	2422 549 44023	Ind var450KHz
5112	4822 157 70302	F7MCS-12216N
5114	4822 157 70302	F7MCS-12216N
5115	4822 157 71636	Birdie coil
5118	2422 535 95881	0.1µH 5% 1008
5119	4822 157 11443	2µH 10.7MHz
5121	4822 242 10261	T6252F00 (75KHz)
5122	2422 549 44108	Ind var 796KHz
5123	2422 549 44108	Ind var 796KHz

6105	4822 130 83075	HN1V02H-B
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216

7101	9351 772 20557	TEA5762H/V1
7103	5322 130 42756	BC857C
7104	4822 130 40855	BC337
7105	4822 130 40855	BC337
7109	4822 130 60373	BC856B
7110	4822 130 60373	BC856B
7112	4822 130 44503	BC547C
7122	5322 130 42755	BC847C
7124	5322 130 42755	BC847C